

**Department of Urban and Regional Planning
School of Built Environment, Art & Design**

**An evaluation of the City of Armadale's incentive for higher density
development through Town Planning Scheme No. 4 in the context of
sustainability.**

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***THIS THESIS IS PRESENTED FOR THE DEGREE OF
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Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

Signature:

Date:

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ABSTRACT

The densification of established urban areas has become a key strategy in an attempt to accommodate increases in urban populations. Through a case study investigation within the City of Armadale, the perceived costs and benefits of increasing residential densities are evaluated with reference to stakeholder opinion as well as social, environmental and economic performance.

This study sets out to evaluate the impact of the recently gazetted City of Armadale Town Planning Scheme No. 4. The City of Armadale is situated on the outskirts or 'mortgage belt' of Perth, and has not previously been subject to higher zonings than R15. Higher residential densities are thus relatively new to Armadale where the potential for expansion has effectively increased by almost 50% under the scheme by a newly introduced dual coding mechanism.

The potential to increase residential zonings and build additional dwellings on single lots has introduced a number of issues not anticipated by Council including grouped housing developments 'not meeting the standards expected' (City of Armadale 2007). This has resulted in Council's desire for additional guidance and regulation in an attempt to improve standards.

The intention of this research is to assess the extent to which the Residential Design Codes and local planning schemes produce positive planning outcomes, as well as determining the effectiveness of the role of local planning policies in guiding development.

Findings of research undertaken indicate that Council views its role as regulator in a system prone to exploitation. Increased zonings do not necessarily result in a widespread loss of vegetation, nor an increase in land values. Social factors are significant in planning, accommodated within local planning schemes and local planning policies. Many planners believe a balance between urban infill and sprawl is necessary and the Residential Design Codes in isolation are insufficient to ensure a

high standard of development, with the majority surveyed favouring a regulated approach.

A number of research tools have been utilised in determining the impacts of revising a local planning scheme and policies including observational studies, document analysis, surveys and interviews. In conclusion, this thesis makes recommendations to improve the form and design of medium density residential developments in Armadale from the perspectives of the market's producers and consumers.



Figure 1: New opportunities have become available for development under a revised town planning scheme in the City of Armadale. This 'blue chip' development site is low-lying and subject to flooding during the winter months.

The potential zoning displayed on the sign is Residential 'R15/40'. The 'R15' refers to subdivision potential, the 'R40' refers to grouped dwellings in a strata dwelling arrangement, incorporating common property (source, author).

Keywords: For the purpose of this study the following terms will be utilised throughout this report:

Sustainability - *a process or condition is one that can be maintained indefinitely without progressive diminution of valued qualities, inside or outside the system. Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Holdren 1995).*

Local Planning Schemes – *a planning instrument made in accordance with the relevant Act in respect to any land likely to be used for development purposes with the general object of securing proper sanitary conditions, amenity and convenience in the apportionment and use of the land (www.dse.vic.gov.au/).*

Local Planning Policies - *a policy of the planning scheme and is one of the tools available for implementing objectives and strategies in the Town Planning Scheme. A LPP is a policy statement of intent or expectation. A LPP gives a responsible authority an opportunity to state its view of a planning issue and its intentions for an area. It can also help the community understand how a proposal will be considered and what factors will influence Council's decision making (www.dse.vic.gov.au/).*

Development Application - *a group dwelling proposal made possible through a dual coding mechanism enforced under a local planning scheme (City of Armadale 2007).*

Urban Consolidation - *A diverse set of planning policies intended to make better use of existing urban infrastructure by encouraging development within existing urbanised areas (so-called 'brownfield sites rather than on non-urbanised land (aka 'greenfield sites'), thus limiting urban sprawl (Hussey 2002).*

Urban Infill - *The use of vacant land and property within a built-up area for further construction or development, especially as part of a neighborhood preservation or limited growth program (www.dse.vic.gov.au/).*

1.0 Introduction

1.1 Background

The densification of established urban areas has become a key strategy in an attempt to accommodate increases in urban populations. The use of vacant land and property within built-up areas for construction and redevelopment is increasingly advocated for and applied through planning mechanisms as a way of achieving sustainability goals. At state and local government level, this strategy has historically been implemented through changes and revisions to metropolitan and local planning schemes.

A policy of urban concentration attempts to make use of established infrastructure to achieve economic, environmental and social goals, particularly around transport nodes, such as rail. Such goals include reduced travel distances to shopping precincts, services and employment, greater use of public transport, pedestrian friendly streets, greater levels of community interaction, preservation of urban amenity as well as establishing a functional public realm (Hardi & Zdan 1997). Urban infill is a concept designed to be the opposite of an under-serviced sprawling city of endless suburbs in an attempt to contribute towards sustainable outcomes.

West Australian urban planning policy embodied in documents such as Network City (2005) and Liveable Neighbourhoods (2000) embraces the concept of sustainability made possible through infill. According to Network City, 60% of new development should occur in existing built up areas while the remaining 40% could occur in previously undeveloped greenfield areas (WAPC 2005). The assumption is that greater urban concentration produces a desirable form to which city spaces should aspire.

This thesis draws on the principles of sustainability and key themes in debate around urban concentration, in a study of residential density in the City of Armadale. The research is timely in light of the introduction of a local planning scheme, Town Planning Scheme No. 4, gazetted in November 2005, which has greatly increased the

potential for ‘brownfield’ development, or that which occurs on existing developed sites (See excerpt of Town Planning Scheme No. 4 at Appendix 7).

1.2 Primary Research Objective

The primary research objective of this dissertation is to evaluate the City of Armadale’s incentive for higher density development through Town Planning Scheme No. 4 in the context of sustainability. This objective seeks to reveal how local planning schemes and the Residential Design Codes (2002) have previously offered a degree of autonomy to developers. For sustainable outcomes to be realised, greater guidance through local planning policies may be required to ensure a more appropriate standard of development. This study seeks to assess the adequacy and effectiveness of the Residential Design Codes and the City of Armadale Town Planning Scheme No. 4 in providing a desired quality of development, particularly in reference to grouped housing sites.

1.3 Subsidiary Research Questions

Have sustainability goals been reached as a result of TPS No. 4?

This question seeks to analyse whether a new planning scheme has succeeded in its aim of contributing to economic, environmental and social, triple bottom line goals. An economic indicator employed in this report is the impact of densification on house prices in the study area compared with neighbouring areas within the same period of time. An environmental indicator employed is an analysis of vegetation impact through a study of aerial photography over time. A social indicator employed is to identify all aspects relating to community and social aspects within the new scheme.

What is the overall effect of allowing density to increase in residential areas?

This question seeks to analyse the issues, challenges and local impacts of increasing residential densities in a local government area. The study area has not previously had scope for densification, so the introduction of a new scheme represents a radical shift in what has been traditionally an area subject to low densities.

1.4 Structure

This report will examine the body of literature demonstrating how urban consolidation and infill relate to the concept of sustainability. Later sections of the report will examine the extent to which goals of sustainability have or have not been realised. Although there are a number of forms urban infill can take, ‘battleaxe’ or backyard subdivision and grouped dwelling proposals are the most prevalent form of development within the City of Armadale. For this reason they are the focus of this study. This report will examine some of the strengths and weaknesses of infill grouped dwelling development to assess whether ‘triple bottom line’ goals have been met or addressed.

Chapter One of this report introduces the topic and provides a brief summary of the structure of the report. It also outlines the purpose and direction of the study.

Chapter Two introduces the concept of sustainability through a literature review and places this within the context of Armadale. Debate around definitions of sustainability and urban infill are presented, and the major schools of thought are explored regarding implementation. Sustainability within the WA context is also explored.

Chapter Three discusses the methodology used in this report including analysis of aerial photography, Council documents, surveys and an in depth interview.

Chapter Four presents the findings of the research, to examine Council’s perception of the implementation of TPS No. 4, to determine the effect of infill development on environmental factors, economic factors and social factors as well as planners’ perception of the impact of TPS No. 4.

Chapter Five summarises the findings of empirical research and ascertains the relationship of the findings to the theoretical perspectives presented in the literature review.

Chapter Six presents conclusions and recommendations.

1.5 Background and Justification for topic

In order to examine the impact of a new town planning scheme within a local government precinct, it is first necessary to examine the background and context of the Armadale area.



Figure 2: City of Armadale, located 25km south-east of the Perth centre (WAPC 2005).

Armadale is located approximately 25km south-east of the Perth central business district and has been chosen for this study due to the introduction of a local planning scheme gazetted in November 2005. The introduction of the scheme potentially impacts upon the City quite dramatically by increasing residential zonings by approximately 50%, leading to an increase in the development potential of land located within the City. This transformation typifies similar changes occurring in parts of urban Western Australia in accordance with the aims and objectives of Network City (2005).

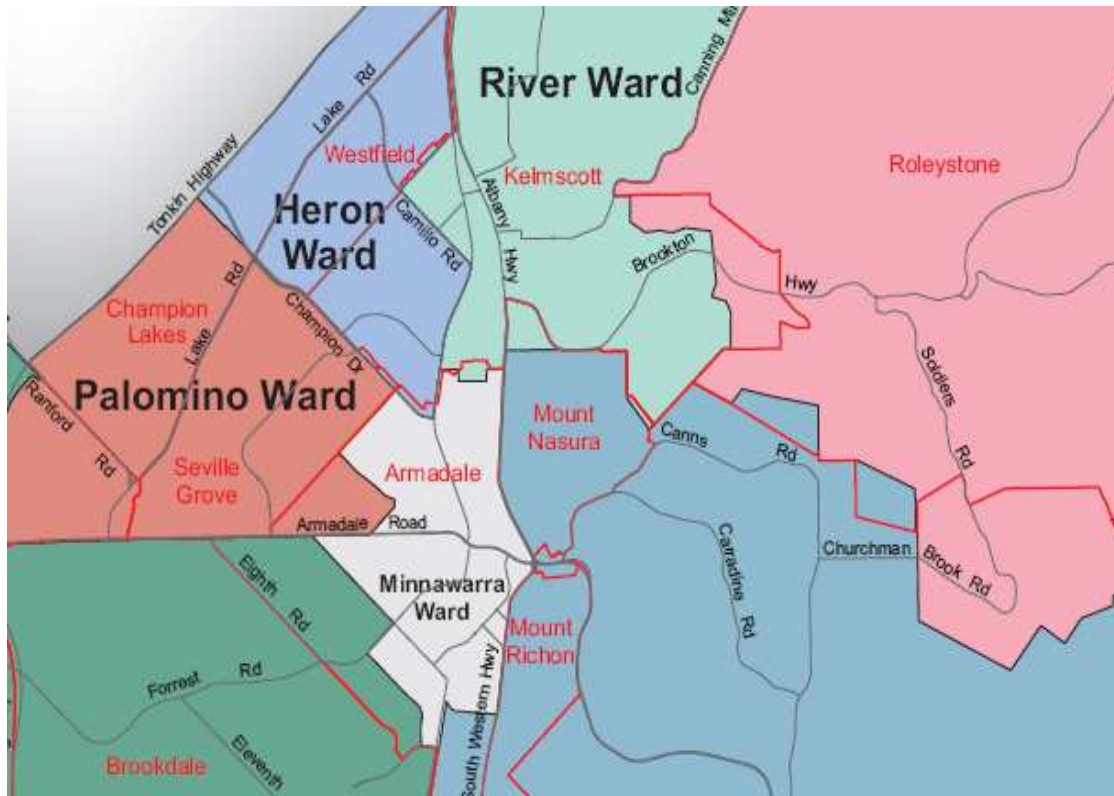


Figure 3: Suburbs of Westfield, Kelmscott and Armadale in relation to other suburbs within the City of Armadale (City of Armadale 2005).

Under Town Planning Scheme No. 4, the potential for urban concentration or infill has increased for the suburbs of Westfield, Kelmscott and Armadale. Each original 700m² lot, formerly zoned R15 has become dual coded to R15/25 under the new scheme. These changes have enabled the provision of battleaxe survey strata lots in former backyards, altering the nature and fabric of the suburb in those lots possessing an effective rear area of 320m² or more (WAPC 2002). The impact of the planning mechanism enabling each former 700m² parent lot to become a multi-unit grouped housing site is a major focus of this report.

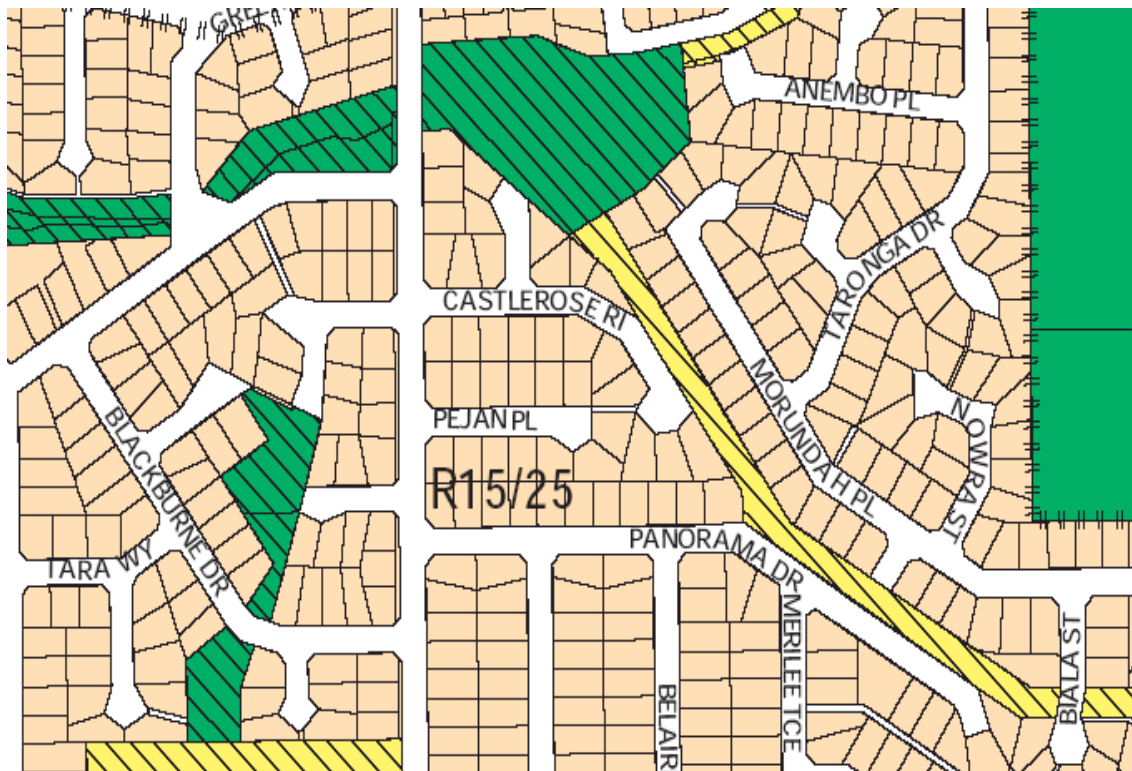


Figure 4: Dual coded single or parent lots in a previously single coded area under City of Armadale Town Planning Scheme No. 4 (WAPC 2005).

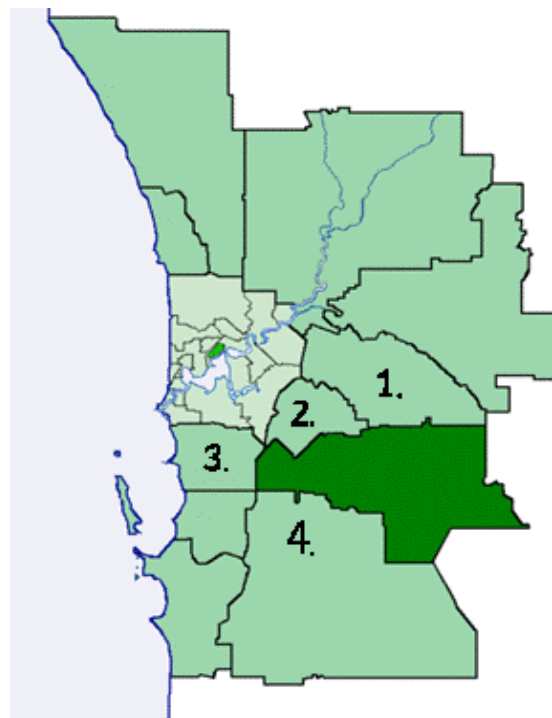


Figure 5: The City of Armadale is bounded by the Shire of Kalamunda to the north east (1), the City of Gosnells to the north west (2), the City of Cockburn to the west (3) and the Shire of Serpentine-Jarrahdale to the south (4) (WAPC 2005).

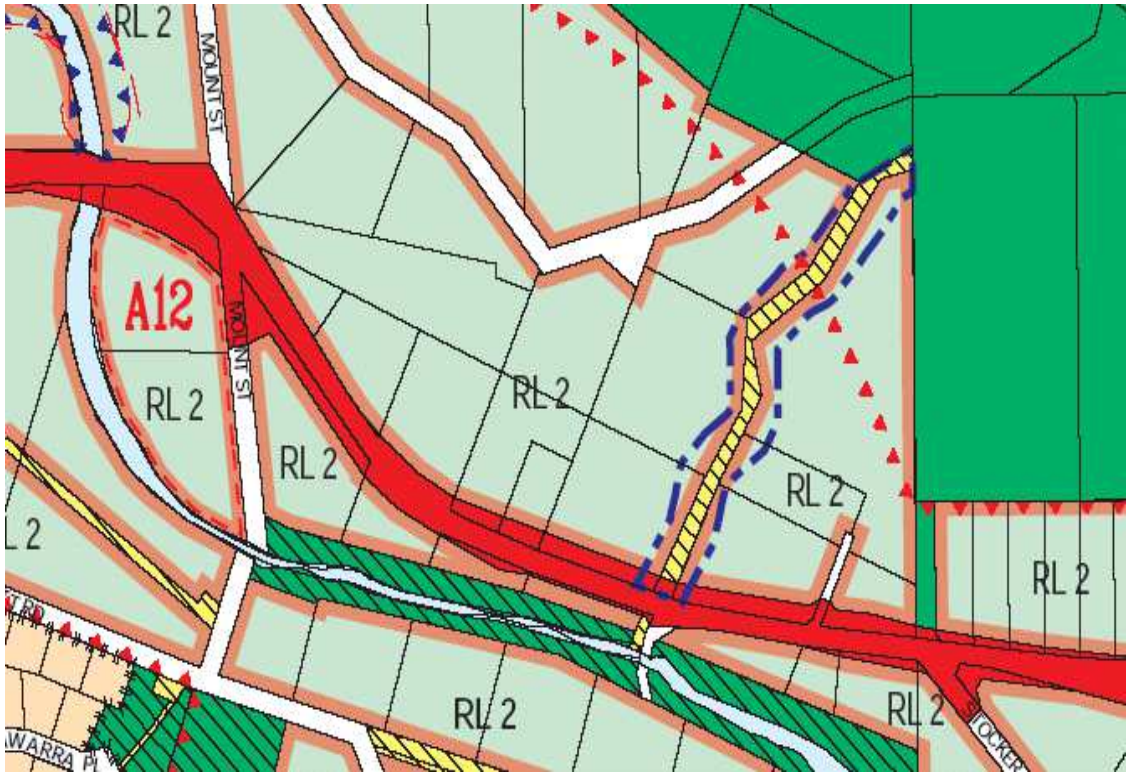


Figure 6: Rural Living zones subject to single 'Rural Living 2' codings under Town Planning Scheme No. 4 (City of Armadale 2005).

Suburbs subject of this study include Westfield, Kelmscott and Armadale. Other suburbs within the City such as Roleystone, Brookdale, Forrestdale and Bedfordale have been excluded from this study as they are subject to single codings or rural zonings such as 'Rural Living 4 and Rural Living 2' (4 or 2 hectare minimum lot size) having not altered between town planning schemes.

1.6 Housing types within the City of Armadale

Westfield, Kelmscott and Armadale have traditionally provided space for the development of medium-density, low-cost residential accommodation with a high proportion of rental and state housing stock. Under the previous local planning scheme, development of Westfield, Kelmscott and Armadale was restricted through lower density Residential R15 zonings in conjunction with the Residential Design Codes (2002) and the previous Residential Planning Codes of Western Australia (1991).



Figure 7: Existing housing stock on a large lot in Kelmscott subject to dual codings under Town Planning Scheme No. 4 (source, author).



Figure 8: Existing Housing Stock – Kelmscott. This land is located within the study area (source, author).

The City of Armadale is a useful location for this study. Historically, Armadale has experienced relatively low densities similar to other areas in Perth. An abundance of land has enabled Armadale's housing stock to nearly all conform to the Australian standard of a detached, single-family home on an individual, relatively large lot. Like many examples facing growth pressure and sustainability concerns, the management of an increasingly intensified urban form is a significant issue with new solutions being sought to accommodate growth within existing city boundaries. In addition, new (greenfield) areas of future growth have recently been made available in Wungong and North Forrestdale, both of which are expected to accommodate many thousands of new residents in the next two decades.

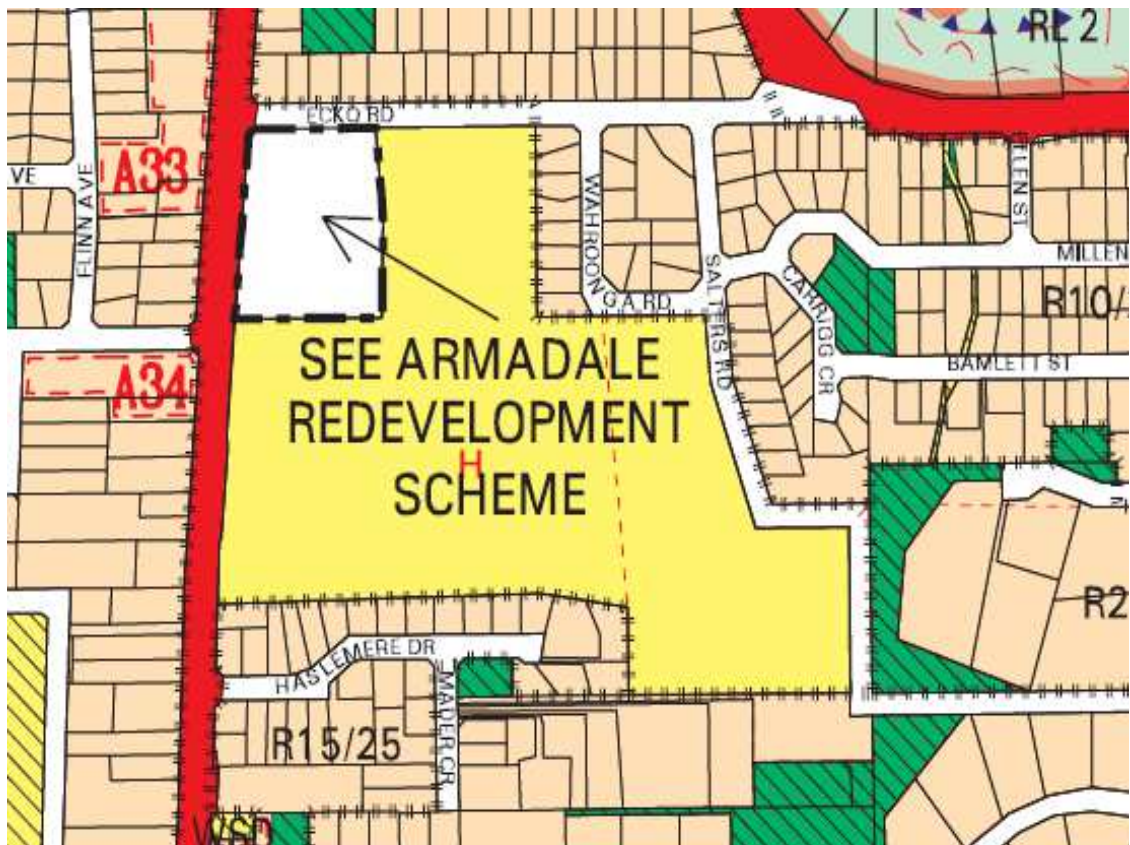


Figure 9: Approximately 50% of the City of Armadale Scheme area is now controlled by the Armadale Redevelopment Authority, particularly those areas requiring renewal (City of Armadale 2005).

Approximately half of the area contained within the City of Armadale's boundary is controlled by the Armadale Redevelopment Authority (ARA). The ARA was established in 2001 under a legal framework, the Armadale Redevelopment Act, and is responsible for managing planning and redevelopment in separate areas. The study area of Westfield, Kelmscott and Armadale are outside of this ARA area, and are controlled, managed and located within the jurisdiction of the City of Armadale. A comparison between the City and ARA's approach to sustainability indicators will be examined later in this report, however for the purposes of this study, both areas will be treated as separate and autonomous entities.



Figure 10: The City of Armadale is located adjacent to an established rail network (source, author).

The study area suburbs of Westfield, Kelmscott and Armadale are ideally located for intensification, adjacent to an established rail network, commercial / industrial districts and two major retail centres. This has enabled justification for the higher zonings in accordance with Network City (2005), yet despite this, implementing the new zoning changes has not been a straightforward process. This may be predictable given the relatively poor condition of much of the housing stock within the City of Armadale, land never originally planned for higher densities.

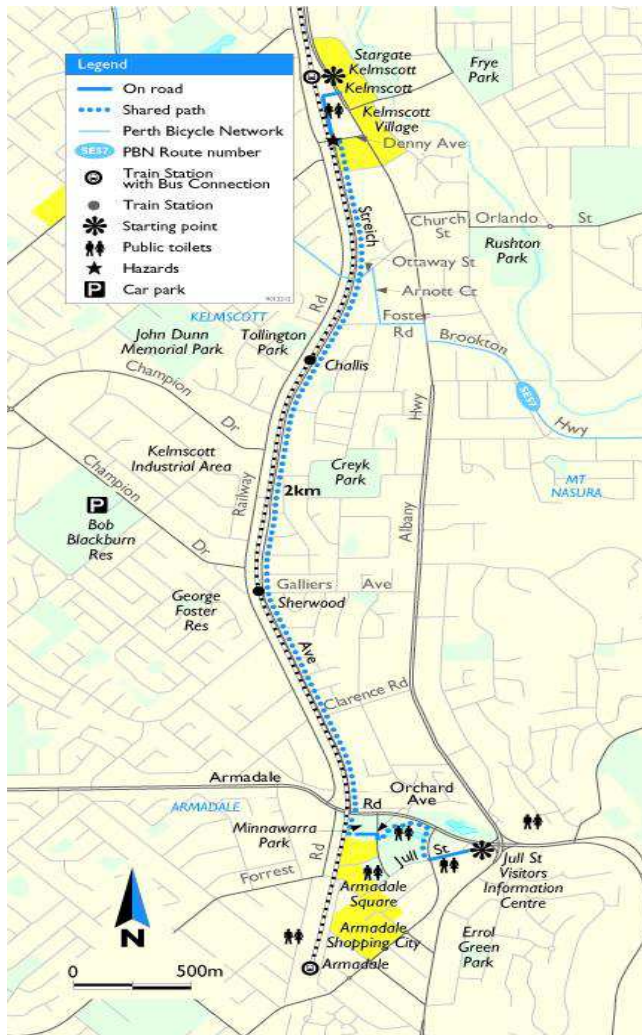


Figure 11: Cadastral Map showing Kelmscott and Armadale located adjacent to a well-established public transport network (WAPC 2006).

1.7 Planning Instrument allowing development at a higher density

The following provisions within Town Planning Scheme No. 4 refer to development at a higher coding, effectively enabling intensification of appropriately zoned lots:

- Clause 5.2.4: ‘the City may permit increases in residential density subject to compliance with the City’s *Residential Density Design Policy* where land is identified on the Scheme map as R10/25, R12.5/25, R15/25 and R17.5/25, development at the higher density is limited to group dwellings up to a density of R25’: and
- Clause 5.2.5: that ‘Development is to be limited to the lower code, except the

City may permit development up to a density of R40 where *certain conditions are met*.

As stated above, development proposed at the higher coding must accord with Council's Residential Density Policy PLN 3.1. Development at a higher code is not an automatic right, but dependent on a proposed development meeting certain criteria or 'certain conditions', designed to provide a benefit to the City through an overall improvement to environmental, social and economic design factors.

The following section of this report will examine a number of specific planning issues which have arisen as a result of infill development. Within the City, development which retains a front dwelling with a 'battleaxe' driveway providing rear access is very common. Advantages of the battleaxe arrangement include having less impact upon the streetscape, cheaper cost of development, less construction of roads/drainage/footpaths and with connection to utility services such as drainage, power and sewerage achieved relatively easily. For many landowners, the ability to construct a dwelling in a former backyard has proven attractive.



Figure 12: Example of battleaxe grouped housing development, zoned R15/25 in Hemingway Drive, Westfield (source, author).

Infill development comprises a number of different forms with clustered dwellings being the most popular. A clustered dwelling is defined as 2 or more dwellings on one parcel of land, which receives Council approval, and later survey-strata approval as a grouped dwelling site (Hussey 2002). Clustered dwellings, where a house exists and a second dwelling is proposed, is possible if the position of the existing dwelling is close to the front boundary of a lot, allowing sufficient rear land for the provision of an additional dwelling. These types of development allow an existing dwelling to be retained, resulting in development at a comparatively low cost with minimal upgrading works necessary. Some argue this is no more than ‘cramming’ (Hussey 2002), however with rising land values and increases to residential zonings, many landowners have undertaken the opportunity to develop their sites in this manner.



Figure 13: Fibro and tile dwelling to be demolished in Banyard Avenue, Kelmscott to accommodate four (4) strata lots at a density of R40. The higher density R25/40 dual coding is due to the site's close proximity to the Kelmscott Train Station (source, author).

1.8 Greater potential for profits under the new scheme

The redevelopment of existing sites, involving clearing (either an original house being demolished or removed, see above) or the construction of new dwellings at a higher density has resulted in profits being realized by developers and landowners. The above scenarios at Figure 13, 14 and 15 would not be possible under the previous town planning scheme, and the introduction of the higher coding has enabled four lots to be created on a single parent lot. Another method of capitalising on the potential for higher densities is for landowners to attain planning approval for an additional unit or more, then market the land with a single retained dwelling as a 'multi-unit site', a practice many Real Estate agents in the area have undertaken since the gazettal of Town Planning Scheme No. 4.



Figure 14: The implementation of Town Planning Scheme No. 4 has seen an increase in grouped dwelling site potential within the City. Prior to November 2005, this did not exist to the same degree (source, author).

Council have attempted to prevent the practice of landowners selling vacant small strata lots, colloquially known as ‘cut and run’ by ensuring landowners built to plate height, so Council can ensure what is approved will actually be constructed although the Western Australian Planning Commission often override Council’s recommended (survey-strata) conditions when approving vacant survey strata development. In this way it is possible for small vacant survey-strata lots to be sold prior to construction, a practice Council seeks to avoid, as dealing with multiple landowners can complicate the construction process.



Figure 15: ‘For Sale’ sign typical of the area advertising planning approvals for a grouped unit site (source, author).

1.9 Objectives of the Research

The primary objective of this report is to evaluate through a case study analysis, a number of selected perceived costs and benefits of zoning changes in the study area. More specifically, objectives include the following:

1. To identify the concept of sustainability in the context of City of Armadale Town Planning Scheme No. 4;
2. To identify the main schools of thought within the implementation of sustainability including regulated/governed and voluntary/free market;
3. To investigate the realisation of selected costs and benefits of increasing residential zonings through a case study investigation. This will involve the following:
 - a). To examine Council's perception of the effectiveness and the success or failure of implementation of TPS No. 4, eighteen months after gazettal of the scheme;
 - b). To examine planning professionals views regarding the effect of revisions to the Town Planning Scheme;
 - c). To determine the effect of infill development on triple bottom line factors: environmental, economic and social;
4. To analyse the results and implications of the case findings and develop recommendations based on these findings.

2.0 Literature Review and Theory

2.1 The debate around urban infill and sustainability

Contemporary discussions about urban form and infill are increasingly linked within the framework of sustainability. The concept has become central to debates about the urban environment. The sustainability agenda arose out of a global awareness that the consumption of natural resources was occurring at a rate greater than the natural environment could support. The 1987 Our Common Future/Brundtland Report cautioned this destruction of resources. This warning gave rise to the concept of sustainable development, whereby economic growth, as a priority for human welfare, was balanced with concerns for social equity and environmental protection (Humphrey et al, 2002; Pacione, 2001). Although the terms sustainability and sustainable development have different meanings, for the purposes of this report, they are used interchangeably.

There are a number of ways sustainability has been defined. One definition of a sustainable process or condition is one that can be maintained indefinitely without progressive diminution of valued qualities, inside or outside the system (Holdren 1995). The World Commission on Environment and Development has defined sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their own needs (WCED 1987).

The 1992 United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, produced a detailed program of action for the 21st century, *Agenda 21*. Negotiations on an international agreement on climate change commenced at this conference (which led to the Kyoto Convention) and agreements on forestry and biodiversity were initiated. Australia responded to the call for sustainability by developing the *National Strategy for Ecologically Sustainable Development* (ESD) 1992 in recognition of the need to conserve resources and protect the environment.

2.2 Local governments and sustainability

In the mid-1980's, in the face of growing environmentalism, local governments in different parts of the world sought to improve their environmental performance. Raemaekers (2000) provides a summary of the local government move towards sustainability in Europe presenting it as four distinct phases of the movement (Khan and Bajracharya 2005, p 312). The realisation that 'one-off measures and a piecemeal approach to environmental protection and environmentalist values' did not lead to positive results led to such values being incorporated.

According to Raemaekers, the first phase of the movement in the late 1980's saw Council's introduce development environmental charters involving principles to guide action on environmental issues and environmental action programs, identifying practical steps to implement these principles. Phase Two in the early 1990's saw the introduction of environmental audits, reviews of the environmental performance of the local authority's own operations and services with state of environment (SoE) reports to measure and assess the significance of the condition of the local environment. The third phase from 1993 saw the development of environmental management systems, externally verifiable monitoring systems to document and improve the organisation's environmental performance. The final phase, Phase Four in the mid 1990's saw the introduction of Local Agenda 21 - a product of 1992 Rio Earth Summit with an emphasis on community vision, partnerships with stakeholders, issue analysis and action plans.

The goal of Local Agenda 21 is to move towards sustainable development with a local focus incorporating social and economic dimensions. It also involves the process of developing local policies for sustainable development, of building partnerships between local authorities and other sectors to implement those policies attempting to 'be bottom-up, inclusive, participative, and open to scrutiny.' (Raemaekers, p.41 in Khan and Bajracharya 2005 p 312) Australia seems to have followed these phases quite similarly with perhaps a time lag of three to four years. Khan and Bajracharya (2005) view this delay as a cause for concern, and further complacency runs the risk

of resulting in ‘social inequality and a general failure to achieve sustainable development’ p 313.

Changes to environmental legislation in Australia over the past few decades have grown from an increasing awareness that development can negatively impact the environment. A number of sectors including the building sector, first started to notice this in the 1990s, leading to the first real attempt to ‘establish comprehensive means of simultaneously assessing a broad range of environmental considerations in buildings’ (Crawley and Aho, 1999 p 2) through Environment Impact Assessments.

The Building Research Establishment Environmental Assessment Method (BREEAM) was the first commercially available environmental assessment tool for buildings, established in the UK in 1990 (Grace, 2000). Since then many similar tools have been launched around the world. These Environment Impact Assessment evaluate the likely positive and/or negative influence a project may have on the environment and can be defined as ‘the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made’ (Haapio 2008 p 21). Their purpose is to ensure that decision-makers consider environmental impacts before deciding whether to proceed with new projects and are administered by local councils. Local governments over the last few decades have moved beyond the basic function of administering local planning schemes and are now seen as responsible for protecting the environment in addition to approving building and planning development.

2.3 Theory of sustainability planning

Interest in sustainability emerged out of ‘the shortcomings of the modernist worldview and its models of development’ (Wheeler 2004, p 34). Wheeler (2004) identifies the following elements as characteristic of the theory of sustainability: a long-term approach to decision making, a holistic outlook integrated with various disciplines and analytic approaches, a questioning of traditional models of growth with the recognition of limits and proactive involvement in healing societies and ecosystems.

Sustainability planning may be best described as a multi-disciplined or meta-theory drawing together a number of theoretical perspectives including ‘rational planning methods, communicative processes, underlying structural forces of political and economic power, social movements and the role of institutions’ (Wheeler 2004 p 50). New theoretical perspectives of deep ecology, ecofeminism and environmental justice have appeared in recent decades, which serve sustainability by creating connections between theoretical frameworks ‘to avoid unnecessary fragmentation of knowledge that will undercut the ultimate objectives’ (Wheeler p 50) Sustainability theory emphasises the connection between elements, viewing systems as a whole.

2.4 Sustainability and Implementation

Within the body of scholarly and professional literature, writers such as Harger (1996), Landry (2005), Doppelt (2003) and Costanza (1995) agree on the fundamental principles and benefits of a sustainable approach: preservation and protection of the environment, economic prosperity and enhancement of social elements within the urban form. The difference of views presented within the literature concerns the proposed manner of the implementation of sustainability.

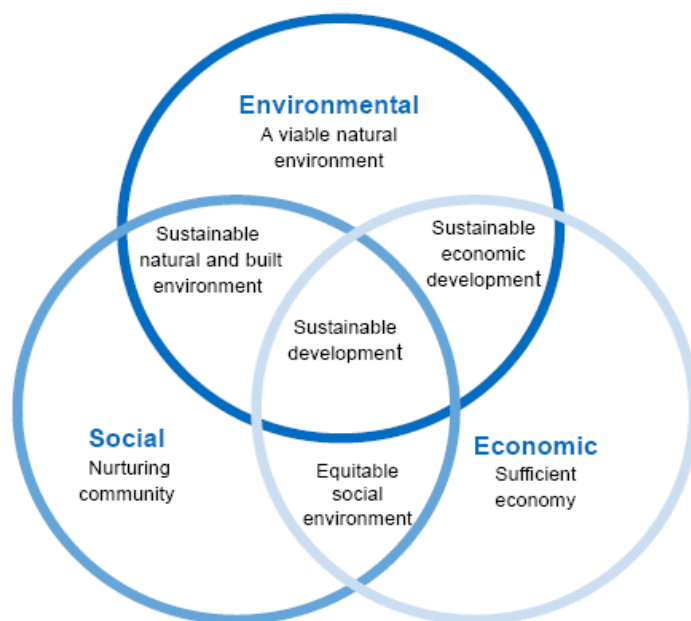


Figure 16: Sustainability is defined as having threefold components, also referred to as the ‘triple bottom line’ (WAPC 2005).

With respect to this implementation, writers are divided into two main categories of thought; the ‘neo-free market approach’ (the liberal or new-right) where an absence of regulation exists, and the ‘neo-regulated approach’. In the former, government and state intervention is given only a limited role, and simply ‘intervenes in the market by imposing rules that are set out and agreed in advance,’ (Allmendinger 2005 p 96). Each individual is free to pursue his or her personal ends and desires ‘certain that the powers of government will not be used to deliberately frustrate his (or her) efforts’ (ibid p96). The neo free-market approach includes those advocating concepts such as re-education, rethinking, morality and intergenerational equity (for example Renn 1988, Bartlett 2001, Veldkamp 1997, Jenkins 1997, Dixon 1999, Syme 2003 and Bosshard 1999) outside of strict controls.

The second category is the neo-reformist approach, where planning controls such as local planning policies and local laws ensure a greater degree of control, aiming to implement sustainability outcomes to a greater, more predictable and more regulated degree (represented by writers such as Harger 1996, Stavins 2004, Lyons 2000 and Maser 1998).

2.5 The threefold meaning of sustainability

The vagueness and imprecise usage of the term sustainability has been noted in several studies, for example Pope 2004, Harger 1996, Bosshard 1999. The term sustainable is often referred to as the maintenance of ecological integrity, a harmonious relation between humanity and nature and harmony in the interaction between individual human beings and natural resources. Although useful as a starting point, this definition excludes the two remaining significant aspects of the concept.

Sustainability has historically been discussed in an ambiguous, value laden and ‘fuzzy’ manner across a wide range of literature often with contradictory and imprecise meanings. Despite this, a number of studies have attempted to analyse and define the concept in a systematic and precise manner. Although generally accepted as having threefold components which are environmental, economic and social (Syme 2003, Stavins 2004), a number of writers omit the social/economic aspects of the

definition, referring only to environmental or ecological aspects (Harger 1996, Veldkamp 1997). This is generally characteristic of earlier discussions regarding sustainability. In later discussions, the concept as discussed generally incorporates environmental, economic and social criteria or the 'triple bottom line' as it is often referred to.

The term 'triple bottom line' has its' origin in economics, in accounting net income is informally called the bottom line because it is typically found on the last line of a company's income statement. A related term is top line, meaning revenue, forming the first line of the account statement. In respect to the threefold nature of sustainability, the triple bottom line was first used by John Elkington in the late 1990's to refer to economic, environmental and social aspects (RMIT 2008). The triple bottom line approach stresses that similar concern is required for environmental and social net effects as for economic.

2.6 Different Approaches within Sustainability

The debate between the regulatory and the voluntary approach to sustainability refers to the means or manner of implementation. The water rating system for electrical goods such as washing machines is an example of voluntary implementation of sustainable outcomes. Purchase of the most water efficient products is not mandatory, however governments encourage consumers to embrace more environmentally sensitive products in the aim towards sustainability.

2.6.1 The Regulated Approach – rules and guidelines for development

Advocates of the regulatory approach suggest that the market is insufficient to assure sustainability. Left to market forces alone, there is little protection of social and ecological resources. Doppelt (2003) cites examples of towns where 'natural wealth had been extracted, where natural abundance was exhausted and the company left the company town. We (the town) are still recovering—four decades later.' Doppelt (2003) laments the lack of quality leadership demonstrated by those attempting to implement sustainability. Doppelt's thesis is that free market approaches are doomed to failure, leading to wasted resources, frustration and cynicism. This frustration will

be directed to those failing to implement protection of the environment. To Doppelt, those who have made the most progress toward sustainability 'view all of their internal members, as well as external stakeholders, as vital parts of an interdependent system' p 43, a concept ignored by many who lack an integrated approach.

Similarly, Ling (2005) describes the ongoing failure of market forces having not done much to reduce the damage to, or depletion of, the natural resource base. His thesis of a neglected agenda of biodiversity, ecological integrity and public participation recommends change at a local level to be enforced with governance and regulation.

Jenkins (1997) documents the failure of economic forces, or the free market approach in achieving principles of sustainability due to its 'foundational thinking being incorrect'. His study analyses the history of western thought with its 'business and consumption as usual' regard to resources. Jenkins argues that western culture needs to modify its thinking regarding interaction with the ecosystem. His observations of an anti-ecological bias in western thinking advocates planning controls to ensure sustainability goals are achieved. Other adherents of the regulated approach such as Lyons (2000) argue in favour of strict governance as leaving policy and conservation incentives exclusively to a free market economy favors powerful developers that will likely overexploit the resource.

Gallagher (2004) defines sustainability as a value-laden term involving many different perceptions and understandings in relation to any one situation with governance necessary to stem the undesirable effects of a free market ideology. In attempting to define the concept with some precision, Harger (1996), another advocate of the regulatory approach to sustainability, identifies the need for an immediately operational or measurable criteria for use as the basis for a quantifiable definition.

Harger laments the traditional business as usual ethic, with its potentially catastrophic effect upon the environment proposing the use of a criteria based scale for assessing sustainability indicators. These encompass a range of aspects including: Energy use, Aquatic systems, Terrestrial systems, Natural hazards, Health, Urban systems,

Poverty, Politics, Education, Transport, Valuation/accounting and other factors (general economy).

2.6.2 The Ethical Approach – A Voluntary System

Proponents of the ethical approach often include the concept of ‘intergenerational equity’ as the basis for the need to encourage and promote sustainability initiatives within development (Costanza 1995, Pearce 1998). Stated simply intergenerational equity means that ‘the next generation should have access to at least the same resource base as the previous generation.’ (Pearce 1998). Crabtree (2005) argues for a strong democratic approach, with involvement by all citizens which is neither top down nor bottom up, but inclusive. Implementation, focuses upon a base of ethically and sustainably constructed trade and extraction relationships. The emphasis is on a holistic approach encompassing social, economic and environmental concerns within a voluntary framework. Other writers such as Costanza (1995), Landry (2005) and Birkeland (2004) argue that ‘landowners and developers will voluntarily embrace these principles in creation of an improved world’, an assertion to be tested later in this report.

Each viewpoint identified in the literature has strengths and weaknesses, a free market approach to sustainability allows developers and landowners a degree of freedom and autonomy, but assumes all will seek to have the same goal of achieving sustainability. A regulated approach is an improvement; governance ensures all landowners must conform to principles of sustainability before planning approval will be granted. The ethical approach offers no guarantee of outcome, but assumes all participants will adopt sustainable behaviour in the creation of an improved world.

2.6.3 Sustainability Assessment Model

Geared towards utilising a criteria-based assessment model are Bellagio Principles. In November 1996, an international group of measurement practitioners and researchers from five continents met in Bellagio, Italy to review progress and to synthesise insights from practical ongoing efforts. Several principles resulted and were unanimously endorsed. These principles served as guidelines for the whole of the

development assessment process including the choice and design of indicators, their interpretation and communication of the result. 'They were intended for use in starting and improving assessment activities of community groups, non-government organizations, corporations, national governments, and international institutions' (Hardi & Zdan 1997 p 132).

According to Bellagio principles, sustainability is defined as the persistence of certain necessary and desired characteristics of people, their communities and organizations, and the surrounding ecosystem over an indefinite period of time (Hardi & Zdan 1997). Achieving progress requires maintaining and improving, both human and ecosystem wellbeing, not one at the expense of the other. Any assessment task requires a criteria based frame of reference to identify if change has taken place and to set a context for judging whether that change is positive or negative. Bellagio principles identify the following indicators for assessment of sustainability including: Vision and Goals, Holistic Perspective, Essential Elements, Adequate Scope, Practical Focus, Openness, Effective Communication, Broad Participation, Ongoing Assessment and Institutional Capacity.

Pope (2004) agrees with the need for precision in sustainability assessment, a process by which the implications of an initiative on sustainability are evaluated via a criteria-based model. Pope argues for incorporating the triple bottom line which 'places equal importance on environmental, social and economic considerations in decision-making.' Mendoza (2003) expands upon this idea, adding elements such as continuity through time, utilisation of resources and integration of economic, ecological, and bio-physical components of resource ecosystems.

As with the regulated approach, some advocates of the ethical approach recommend the use of quantifiable indicators on a continuum. Using this methodology, developers who contribute to lower emissions earn a higher ranking on the sustainability ladder based on water and energy saving initiatives (Veldkamp 1997). Other studies such as Di Rosso's analysis of the Harvest Lakes Precinct (2003) utilise a similar criteria based approach in assessing whether elements relating to sustainability have been achieved. Di Rosso's study presents 25 social, economic and environmental criteria

to assess the extent to which the Harvest Lakes development conforms to principles of sustainability pointing to the fact that a criteria based model is necessary for precision in sustainability assessment.

2.6.4 A Marxist Critique/View

The Marxist view sees planning in terms of power relations, that power dynamics within the city have often been overlooked. In the past few decades, planning has 'often allied itself with powerful or economic forces' that have increased inequity (Wheeler 2004 p 45). The powerful class comprised of growth coalitions of developers, real estate interests and local politicians are actively involved in promoting local development.

The Marxist model identifies two classes, capital and labour with competing and self-serving interests. 'Urban areas and planning cannot be treated as objects of study separate from society' (Allmendinger 2002 p 68) and planning serves capitalist interests by giving the impression of public control. Each 'player' in the capital process engages with the built environment while pursuing its own interest single-mindedly: labour, capital/ entrepreneur, construction interest, land and property owners. It has been argued that the planning process is nothing more or less than an agent of the State – which generally supports the capital.

Marxism often perceives planners 'as dupes to the real functioning of capitalism, they not only defend the existing capitalist social order but actively seek to clear a path for it by anticipating problems and working through their professional and public interest role to avoid them' (Allmendinger 2002 p 90). It may be noted that Left Critical Theory (inspired by Marxism) replaced the earlier Marxist theory 'when it became clear that the experience of Soviet-style communism and socialism did not lead to freedom and democracy' (Allmendinger 2002 p 82).

2.6.5 Frustrated Idealism

The frustrated idealism of social reformers such as Robert Owen, Titus Salt and Ebenezer Howard viewed planning as a set of ideas, utopias and urban problems as ways to generate social reforms ‘but became disappointed as the scale of urban problems escalated and social justice was not able to outpace market development’ (Tewdwr-Jones 2002 p 41) Frustrated Idealism represents a history of unfulfilled ideas and utopias (social and design) as societies are inherently imperfect. Reformists and idealists blame inadequate planning controls as the problem, not imperfect ideals, complications of reality or planners shortcomings.

2.7 Sustainability in the WA context

In 2003, *Hope for the future: The West Australian State Sustainability Strategy, a vision for quality of life in Western Australia* was released. According to the Strategy, sustainability is defined as ‘meeting the needs of current and future generations through the integration of environmental protection, social advancement, and economic prosperity’ (WAPC 2003). Key principles of the State Sustainability Strategy include: protecting the environment, responding to social changes and assisting the creation of regional wealth.

Following on from the State Sustainability Strategy, preparation for Network City (2005) was undertaken in the early 2000’s. As Perth and Peel’s current strategic framework for working towards sustainable development, Network City was developed ‘from an open, consultative community process, developed through Dialogue with the City’ (WAPC 2005). The centrality of the importance of sustainability in planning in Western Australia is currently well established as is evident from the following excerpt from Network City (2005) p 57:

‘The fundamental concepts of sustainability – the precautionary principle – intergenerational equity and biodiversity protection – are widely accepted as a rational and equitable basis for planning decisions that protect all interests, both present and future. The environmental imperatives of the State Planning

Strategy tallies with the WAPC's Environment and Natural Resources Policy (Statement of Planning Policy No. 2) which recognizes the importance of environmental protection and management as a basis for protecting our future lifestyle'.

2.8 Planning in Western Australia – The Statutory Framework

The legal framework for the Western Australian planning system in Western Australia is the *Planning & Development Act* (2005), providing for a system of land planning and development throughout the state. The West Australian Planning Commission (WAPC) is recognized under the Act as 'a body corporate with perpetual succession' and acts as the sole decision making body for the state, promoting orderly and proper planning in a single framework.

At local government level, the Residential Design Codes (2002) and local planning schemes prepared by local authorities provide an additional level of planning regulation. The 2002 Codes, replacing the Residential Planning Codes, gazetted in 1991, 'provide a comprehensive basis for the control, through local government, of residential development throughout Western Australia. They are intended to cover all requirements for planning control purposes and to minimise the need for councils to introduce separate planning policies or variations to these matters' (WAPC 2002).

Within the Western Australian planning system, the 'R-Codes' are a major statutory document contributing towards ensuring that development occurs in such a way that is fitting to the needs of its occupants and protective of the amenity of various localities. Local planning schemes work in conjunction with the Codes, assisting in the development process by allocating an appropriate density coding over each parcel or precinct of land within the local government's scheme area.

Local planning policies act to further guide development in a more area-specific manner, supplementing both the R-Codes and a scheme where local regulations are required due to the unique nature of an area. The Codes support the preparation of local planning policies 'where particular matters of a local nature demand particular

planning controls' (WAPC 2002). The potential for an increasing level of regulation exists with local planning policies, through their specific references to all aspects of design, colour, landscaping, vehicle access, streetscape, heritage protection and building orientation.

Other means of local government planning regulation include Detailed Area Plans, Structure Plans and Outline Development Plans; planning instruments usually prepared prior to an area being developed or built upon. All land contained within such areas must develop in accordance with these larger precinct plans, providing for orderly and proper planning, rather than the 'ad hoc' approach of 'spot rezonings' a practice where a lot is developed in isolation without regard to the wider precinct.

A number of local government agencies in Western Australia such as the City of Mandurah and the Armadale Redevelopment Authority employ a criteria-based Sustainability Charter and accompanying Sustainability Audit. Meeting 'sustainability indicators' (such as installation of water tanks and gas/ solar water systems) is compulsory and represents a regulated approach where developers must meet certain criteria prior to a development application being approved.

2.9 Planning for population growth in WA

To a large extent, the trend towards infill development is driven by population growth. Current demographics and plans show steady and inevitable growth of Perth's population for the next two decades' (Network City 2005). With a rapidly growing population 'it is essential that planning endeavours to address and adopt measures to control the overall and per capita impact of urbanisation on the environment and implement practices that can help ensure sustainable urban infill' (Loh 2007). A rapid increase in population of a city often leads to undesirable outcomes 'however studies have highlighted that population sprawl over a large area may potentially have a much greater ecological impact than that of a city with a high population density' (Loh 2007) hence Network City's emphasis on a balance between infill and sprawl.

Both Network City and Liveable Neighbourhoods aim to encourage walkable neighbourhoods, easy access to services, fostering a sense of community, providing for a variety of lot sizes and housing types, and ensuring the protection of key environmental and cultural areas. The urban infill approach advocated by Network City is a measure taken to address urban sprawl and the problems associated with it, and can be described as ‘the conscious effort to increase the density of development and intensity of previously developed urban sites’ (Loh 2007).



Figure 17: An example of urban infill within the study area, a group dwelling site located on Third Avenue, Kelmscott (source, author).

3.0 Methodology

The methodology to be adopted in this research includes:

- Local observation;
- Content analysis of Council's planning documents;
- Armadale as a case study, particularly in reference to the introduction of a new town planning scheme;
- Surveys and an in-depth interview.

This report will utilise both primary and secondary data. Primary data will be gained from surveys and an interview carried out with planning staff at the City. Secondary data will comprise a content analysis of major planning documents including Council's Town Planning Scheme No. 4, meeting agenda items and local planning documents. All secondary data to be accessed in this report is available within the public realm, on Council's website, with the exception of aerial mapping, for which permission was granted by the City's drafting section.

This report involves a number of methods, in accordance with Bell's (1987) recommendations that no research methods should be excluded. Bell considers a case study valid if it is carried out systematically and critically, if it is relatable, and if by publication of the findings it extends the boundaries of current knowledge. This report has attempted to follow this approach. 'The great strength of the case study method is it allows the researcher to concentrate on a specific instance or situation and to identify, or attempt to identify, the various interactive processes at work. These processes may remain hidden in a large-scale survey but may be crucial to the success or failure of systems or organizations' (Bell 1987). The following limitations are identified in this dissertation:

- Time constraints (one semester);
- The group of survey respondents work within local government or state government planning. The group is not totally random and is biased towards a certain social arena (university educated, for example).

3.1 Research methods

3.1.1 Quantitative and Qualitative Research methods

Qualitative and quantitative methods of research have different emphases and are not necessarily mutually exclusive. Bell (1987) states that quantitative researchers ‘collect facts and study the relationship of one set of facts to another’ with often generalisable conclusions. Qualitative research is usually structured, logical, measured and wide while quantitative research is more intuitive, subjective and deep. Both a lengthy discussion and short surveys with those in the planning industry have been employed within this report, allowing the exploration of issues which became apparent only after the investigation had begun.

Patton (2002) identifies three kinds of qualitative data. The first, interviews, may involve open-ended questions yielding in-depth responses about a subject’s experiences, perceptions, opinions, feelings and knowledge. The second, observations, comprises ‘fieldwork descriptions of activities, behaviours, actions, conversations, interpersonal interactions...or any other aspect of observable human experience’. The third, document analysis includes ‘written materials and other documents from organisational’ sources. This report has attempted to utilise all three investigation types.

In respect to surveys and interviews, Patton recommends ‘purposeful sampling’ where individuals are chosen because they are ‘information rich and illuminative, that is, they offer useful manifestations of the phenomenon of interest’. Planning staff at the City of Armadale have been chosen for study as they meet this criterion, working within the day-to-day operation of the town planning scheme. In respect to formulating interview questions, three types identified by Patton include: the informal conversational, the general interview guide approach and the standardised open ended interview.

The method utilised within this report has been the general interview guide where questions are listed providing topics or subject areas within which the interviewer is free to explore, probe and ask questions that will elucidate and illuminate the particular subject. The interviewer remains free to build a conversation within a particular subject area, to word questions spontaneously, and to establish a conversation style but with the focus on a particular subject that has been predetermined. The main advantage of this method is it allows the interviewer to decide how best to use limited time available. The interaction is kept focused while allowing individual perspectives and experiences to emerge (Patton 2002).

3.1.2 Surveys

The general aim of surveys is fact finding, 'to obtain information which can be analysed and patterns extracted and comparisons made' (Bell 1987). The primary survey type used for this report was a self – completion questionnaire administered by myself by electronic mail. Generally speaking, the aim of surveys is to obtain answers to the same questions from a large number of individuals to enable the researcher not only to describe, but to compare, to relate one characteristic to another and to demonstrate that certain features exist in certain categories (Bell 1987).

In respect to sample sizes, this has been adequately addressed as all planners working at the City of Armadale have been contacted. Other respondents include private consultants working in the local area and Department of Housing and Works staff, selected due to the high proportion of Homeswest housing stock in the study area. The respondent group includes local government, state government and private consultant planning staff.

The survey used in this report sought to meet the research goals of testing the acceptability and suitability of new developments at a higher density. The survey of Council planners comprised a significant part of the study's primary data and was developed and undertaken in the very early stages of this project. Surveys were distributed throughout late 2007 and early 2008.

3.2 Survey Question Rationale

The purpose of this survey is to ascertain whether Town Planning Scheme No. 4 has been a success and contributed towards sustainable outcomes being reached. The questions have been formulated to access this information quickly and in a straightforward manner. The following is a brief explanation of each question and the reasoning behind the question order:

Question One – What is your relationship to planning?

This quantitative question asks where within the planning profession does the individual work? (local government, planning consultancy, state government). This question has been posed to ascertain each respondent's proximity to the scheme. Those closest are those who work at the City, dealing with provisions of the scheme on a day-to-day basis, also close are planning consultants, and most distant are state planners, those aware of provisions within the scheme, but not so intimately acquainted.

Question Two – In your view, has the adoption of Town Planning Scheme No. 4 resulted in an improvement to the City with respect to sustainability?

An open ended structure to this question allows the respondent to express views on their personal view of the success or otherwise of Town Planning Scheme No. 4. Bell (1987) states that most refusals occur during the early stages of any survey. To minimise the possibility of a refusal the question is relevant to the central topic and easy to answer, it is applicable to and easily answerable by all respondents.

Question Three – As a planner, do you favour urban consolidation/infill development, outward development or a combination of both?

The third question is simple but revealing, and determines whether the respondents opinion is that urban consolidation or sprawl results in better planning outcomes. Respondents are also able to state that a combination or balance between both is the

preferred model, similar to the intent of Network City.

Question Four – In your opinion does Council’s local planning policy 3.1 (Residential Density) provide a benefit to the City? Or are the Residential Design Codes (2002) and Council’s scheme sufficient in providing sustainable planning outcomes?

This question aims to determine the respondent’s thoughts and knowledge regarding the role of local planning schemes in guiding development, if current regulatory instruments are sufficient or if greater guidance or regulation is required.

Question Five – Which development types would you like to see, or prefer to see in the City of Armadale?

The final question allows an open-ended qualitative response to the kinds of development the respondent believes Armadale would most benefit from. Most planners propose or approve development in some form so it was assumed that the respondents would have a strong opinion on this issue. 20 completed quantitative surveys were returned from individuals approached and all but one survey was completed from a senior member of staff at the City of Armadale, representing a response rate of 95%. One full-length qualitative interview was also completed.

3.3 Methodology for each objective

The following section presents the objective of this research, followed by the methodology for each objective. The findings will be explored in the following chapter.

1. *Objective: To examine Council’s perception of the success of the implementation of Town Planning Scheme No. 4. (The information for this objective will be gathered from document analysis).*
2. *Objective: To examine planning professionals opinion regarding the implementation of Town Planning Scheme No. 4 (The information for this objective will be gathered from 20 surveys and one full length interview).*

3. *Objective: To determine the effect of Town Planning Scheme No. 4 on triple bottom line factors: environmental, economic and social. (The information for this objective will be gathered from an analysis of aerial photography, an analysis of local land values over time as well as an analysis of Town Planning Scheme No. 4 and Local Planning Policy PLN 3.1).*

NB: For the purpose of this section, 'Council' refers to elected Councillors as well as Executive staff. 'Planning Professionals' refers to planning staff employed by the City.

Objective 1: To examine Council's perception of the success of the implementation of Town Planning Scheme No. 4.

The purpose of this section is to determine whether Council's view is that the new local planning scheme introduced in late 2005 has resulted in an improvement to the City by contributing to principles of sustainability. Council's overarching statement in respect to implementing sustainability is 'to balance the needs of development with sustainable economic, social and environmental objectives' (City of Armadale 2007). Sustainability is thus central to Council's philosophy and operation in respect to assessing and approving development. This section relies on a secondary data source, a section of Council's website entitled 'Amendments to residential density development policy' dated 17 March 2007.

Objective 2: To examine planning professionals' opinion regarding revisions to the Town Planning Scheme.

This section will employ the use of an interview and surveys with 20 town planning staff with some connection to the Armadale area for supplementing the primary data. The survey consisting of five brief questions and was distributed to 20 planning professionals by electronic mail, seeking to uncover perception and attitudes towards the success of the new scheme. Where respondents did not work at the City of Armadale, the questions were administered by electronic mail with additional explanation provided to clarify the intent of each question.

Having access to such a select group proved advantageous in uncovering how successful the implementation of the scheme had been and included (among others):

Planning Services Manager – City of Armadale
Strategic Planning Manager – City of Armadale
Senior Environmental Planner – City of Armadale
Director Development Services – City of Armadale
Coordinator Statutory Planning – City of Armadale
Senior Planners – City of Armadale
Planning Officers – City of Armadale
Planning Consultants (within local area)
Compliance Officers – City of Armadale
Planning Assistants – City of Armadale
State Government Planning Staff – Department of Housing and Works

All surveys were returned by electronic mail (or printed out with handwritten answers in one case) with the exception of one individual working at the City who did not reply to the survey.

The sole criteria for eligibility for the survey was that the respondent was required to be involved in working with Town Planning Scheme No. 4 or having some knowledge of the subject study area in some professional capacity in local government, state government or as a local planning consultant.

The questionnaire was short, designed to take approximately 10 minutes to complete, and contained both quantitative and qualitative questions. This is essential as qualitative questions allow participants to express their views in an unstructured way, providing breadth of information (Patton 2002). The majority of the questions however required a quantitative response. This allowed the questionnaire to be kept brief, and also facilitated easier manipulation of data, in percentages for example.

Objective 3a: To determine the effect of Town Planning Scheme No. 4 on triple bottom line factors: environmental.

The purpose of this section is to determine whether the introduction of a new town planning scheme allowing a greater intensification of development has contributed to promoting the principles of environmental protection. This has been accomplished through an analysis of aerial photography in the area over a five-year period. It would be expected that due to increases in potential density that less vegetation would be protected as a result of clearing to accommodate additional dwellings. The assertion to be tested is: does infill made possible through revisions to a town planning scheme contribute to widespread clearing of previously vegetated sites over the entire study area, or is this confined to localised areas?

Aerial photographs were obtained from the City of Armadale in digital and hard copy format and were studied over the entire study area; i.e: all areas subject to split coding as a result of Town Planning Scheme No. 4, rather than selected areas. The methodology for this section involved an analysis of vegetation over a five-year period for the study area of Kelmscott, Westfield and Armadale. Due to improvements in the accessibility, improvement in quality and availability of aerial photography in recent years, the entire study area can be analysed in depth.

The digital format is an ideal medium for this type of investigation, enabling a close analysis of each area to investigate vegetation loss at an appropriate scale. Digital photographs were obtained from 2003, 2005 and December 2007 (the latest high resolution photography available and in excess of two years after the gazettal of Town Planning Scheme No. 4) in order to fully examine the effect of the scheme on vegetation density.

Data collected relates to removal, natural growth and replanting of trees within the suburbs of Westfield, Kelmscott and Armadale after November 2005. For the purposes of this report it is assumed that the base R15 coding offered a level of practical protection to the environment through precluding removal of mature trees on the rear portion of a site now made possible by a split coding. Despite this, nothing

prevents landowners from clearing lots in residential areas for reasons other than the provision of a dwelling.

Council having anticipated the removal of vegetation through infill, seek to retain vegetation where practicable: 'Existing trees on a site, especially mature trees should be preserved whenever possible' and: 'In the case of sites including six or more units, planting of, and retention of, individual mature trees at strategic locations should be provided' (PLN 3.1 City of Armadale 2007).

Roleystone and Bedfordale were excluded from the findings of this section due to the rural nature of the area (many lots are protected by the existence of building envelopes prohibiting clearing outside of the building envelope) as well the absence of split codings. North Forrestdale was also excluded due to single codings, prior clearing having occurred, and the absence of potential of intensification under Town Planning Scheme No. 4.

Objective 3b: To determine the effect of Town Planning Scheme No. 4 on triple bottom line factors: economic.

The purpose of this section is to ascertain if land values proportionally increased or decreased at a greater rate than the wider area of Perth due to the intensification of development made possible through gazettal of the new scheme. Within the local context, the study area was potentially advantaged by upcoding from R15 (666m² average lot sizes) to R15/25 (350m² average lot sizes). This contributed to an increase in development potential by almost 50% over entire study area of Westfield, Kelmscott and Armadale.

In terms of the local context, the potential for infill occurred in isolation and did not extend to neighbouring Council areas, such as the City of Gosnells and the Shire of Serpentine-Jarrahdale. Despite being located closer to the central business district of Perth, the neighbouring local government of the City of Gosnells with a density under TPS No. 6 of R17.5 throughout the majority of the scheme area (WAPC, 2008) does not allow the same advantage of dual coding development to landowners within the

same time period. This is also true of the Shire of Serpentine-Jarrahdale, also subject to rural codings requiring larger lot sizes than Armadale.



Figure 18: Neighbouring City of Gosnells – generally subject to single, rather than split codings reducing potential for infill development (Town Planning Scheme No. 6) (WAPC 2005).

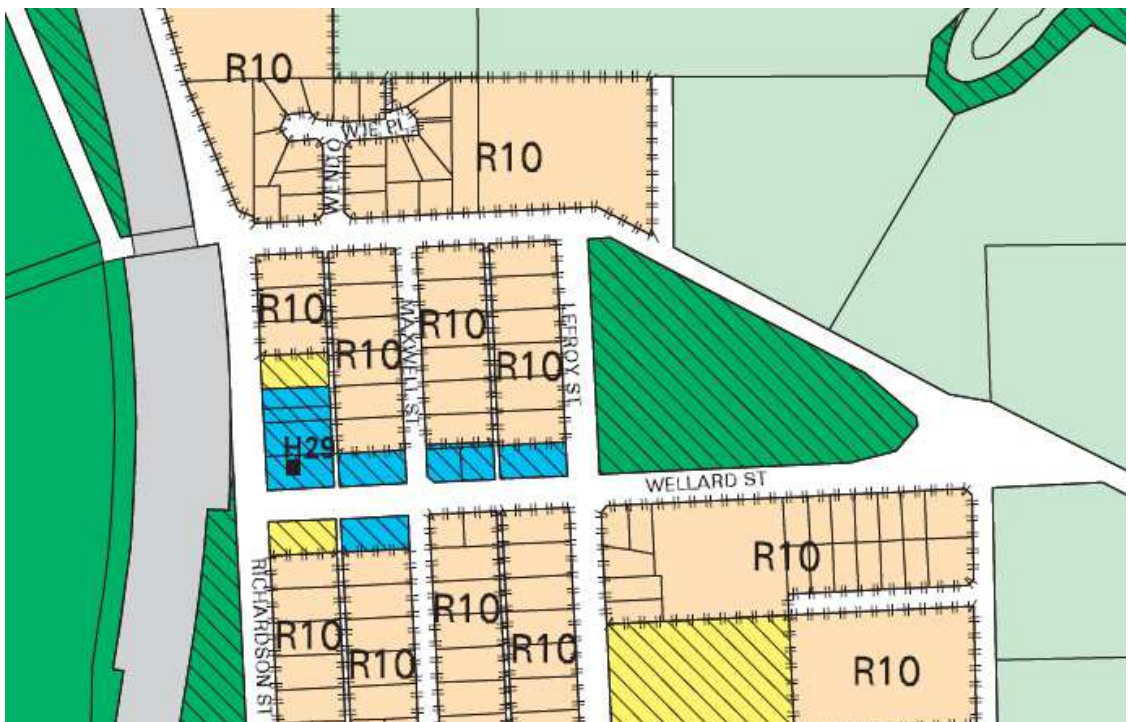


Figure 19: Neighbouring Shire of Serpentine-Jarrahdale, also subject to single codings (Town Planning Scheme No. 2) (WAPC 2005).

Objective 3c: To determine the effect of Town Planning Scheme No. 4 on triple bottom line factors: social.

The purpose of this section is to determine whether the new scheme has contributed to the improvement or otherwise of social aspects of sustainability. This will be tested by document analysis (secondary data) identifying whether social aspects have been addressed within the City's amendment to residential density policy 3.1. A major concern expressed in Council's amendment to the Residential Density Development Policy PLN 3.1 is 'in dual coded areas, developers are expecting to develop at the higher code as a right rather than *where benefits will be provided to the future residents and to the community in general*' (City of Armadale 2007).

The end goal of incorporating social elements within grouped housing developments is to benefit and increase wellbeing among the residents and community in general. Liveable Neighbourhoods (2000) considers that 'the primary objective today in planning any new part of a city or town is to design a framework for community that is sustainable, safe, stimulating and efficient.' Whether this goal has been incorporated within Council's planning framework will be tested in the following section of this report. Council documents similarly claim that Town Planning Scheme No. 4 will bring about future social benefit to residents. Approvals will only be granted where it can be demonstrated that social aspects such as community focal points, walkability to services, surveillance and similar aspects will be integrated within grouped dwelling developments.

4.0 Findings – Results of Research

4.1 Objective 1 – Council’s Perception

The previous chapter formulated a number of tests in an attempt to measure the impact of the implementation of a new town planning scheme including how the study intended to approach the investigation and how answers to the question would be sought. This section of the report will present the findings of the above tests undertaken with results to be presented individually under each objective.

Council’s view of its scheme is evident in the summary of findings related to the 17 March 2007 agenda item entitled ‘Amendments to Residential Density Development Policy’ (City of Armadale, 2007). As of this point, the scheme had been gazetted for approximately 16 months, and thus the impact of the new scheme had been clearly felt, particularly with respect to the increase of development applications received by the City. The overall impact of the scheme is best summarised by the following introductory statement: *‘Concerns have been expressed that development applications within the City’s dual coded areas are not meeting the standards expected’*.

Since the introduction of density changes under Town Planning Scheme No. 4, ‘there has been a major increase in grouped development proposals considered by the City in accordance with the Scheme Provisions and the adopted Residential Density Development Policy’ (City of Armadale, 2007). In respect to lower standards, Council’s concerns relate primarily to the following areas:

- A lack of architectural innovation;
- Exploitation of zonings by developers who do not meaningfully contribute to the City’s housing stock;
- Developers expectation of developing at higher codings regardless. There is no ‘absolute right’ (City of Armadale 2007) to develop at the higher code, however the City may permit development at the higher code where certain conditions and standards are met;
- Lack of benefit to the community by providing low standards of dwellings,

landscaping and crossovers with little improvement to the streetscape;

- A tendency towards uniform development, no eaves, a lack of street surveillance;
- Retained dwellings as part of a grouped housing development remaining in poor condition, insufficient upgrading works undertaken;
- Too many blank walls, units not addressing the street (see below example);
- Streetscapes dominated by garages;
- Poor landscaping;
- Use of inappropriate fencing, lack of visual permeability (see Figure 20).



Figure 20: Lack of visual permeability, units not addressing the street, inconsistent with good design principles (source, author).

Hussey's (2002) findings support the view that the best housing design is that which contributes in a meaningful way to the street, incorporating the following attributes. They concur with Council's findings, presenting the following as more desirable attributes of housing design:

- Garages that do not dominate the visual impact of dwellings;
- High quality landscape planting;
- Broken building mass or repetition, with diversity of materials and features;

- A relationship between indoor and outdoor space;
- Front doors that offer street frontages;
- Fences and walls not stark or bare, particularly when buildings face onto them;
- Outdoor design that has not presupposed 'low maintenance' to mean full paving, and a recognition that compact areas can be green;
- An absence of featureless spaces;
- Houses fronting or facing the street;
- Parking areas created so as not to reduce the attractiveness of sites or create a barrier to the street;
- Balconies of sufficient size, with canopies for weather and use of partitions for privacy.



Figure 21: Fencing: Lack of visual permeability, units not addressing the street within Kelmscott in the study area (source, author).

4.2 Higher density as a reward for contributing to the City's housing stock

Council's report, released in March 2007 (see Appendix 3) conveys the view that development at a higher coding is considered a 'right' by a number of developers due to zoning changes under the new scheme. Council attempts to clarify the position that dual coding is essentially a reward system for showing a willingness to upgrade the City's housing stock. Council's desire is to 'more clearly specify the criteria for eligibility to receive the density bonus and specifically identify requirements relating to streetscape, building design, open space and landscaping' (City of Armadale 2007). This has led to the amendment of the planning policy specifically designed to address any uncertainties and ambiguities regarding standards of development.

Elsewhere, Council requirements state 'in addition to the requirements of policy PLN 3.1, Council may be prepared to consider using its discretion and approve development at the R40 code where 'the applicant can demonstrate that the proposal will improve the street and is prepared to contribute towards streetscape improvements and footpaths where required' (Structure Plan Precinct Four City of Armadale 2007).

4.3 Objective 2 – Planners opinion of the new scheme

A slight majority of 55% or 11 of the 20 respondents sampled are employed in local government at the City of Armadale, working directly with the implementation of Town Planning Scheme No. 4. The majority of these also worked under the previous Town Planning Scheme No. 2 (having been employed by the City prior to November 2005). Six (6) state planners and three (3) private consultants working in a local consultancy comprise the remainder of the survey group.

Overall, 15 out of 20 or 75% of respondents believe the implementation of Town Planning Scheme No. 4 has resulted in an improvement to the City with respect to sustainability (or will in the future). This is a high proportion and possibly at odds with Council's own position that standards of proposed development are quite poor, the entire basis for amendments to policy PLN 3.1.

Of the sample, 50% believe a balance between infill and outward development should be achieved. One respondent was undecided, 35% saw infill as the best type of development and 10% favoured sprawl as a preferred option. This reveals that in general, the majority of planners are in favour of higher densities, or kinds of infill development made possible under the revised scheme.

55% of respondents believe that the Residential Design Codes are insufficient to ensure high standards in isolation, conveying the view that further guidance is required through the use of local planning strategies. One respondent expressed the view that local planning policies are 'location specific' and therefore important for local areas to encourage and retain individual character. 10% of respondents had no strong view either way, whilst 35% felt the Codes worked satisfactorily in isolation. Although partially determined by the market, many respondents argued for higher densities in Armadale, at present a locality with very little high density housing stock.

Several respondents expressed the view that 'more expensive' or 'more aesthetically pleasing' development should be encouraged in the City of Armadale. This final question regarding the types of preferred development in Armadale proved illuminating, with a variety of responses being provided. Responses ranged from 'Victorian Townhouses', to the creation of a second central business district. Over 60% of responses referred to the desire for a greater proportion of high density development. No responses advocated lower density, indicating planners in general, support higher density development.

The results of the survey to 20 local government, private consultant and state government planners are summarised below:

Q1 – Relation-ship to planning	Q2 - Has Town Planning Scheme No. 4 resulted in an improvement to the City of Armadale with respect to sustainability?	Q3 - Urban consolidation/ infill, outward development on the fringes / combination	Q4 – a) Are local planning policies necessary? b) Are the Residential Design Codes (2002) sufficient?	Q5 What sorts of development would you like to, or prefer to see within the City of Armadale?
1. LG	Yes	Urban Consolidation	a)Yes b) No	Higher Density R100 around rail networks
2. LG	Yes	Balance between the two	N/A	Higher density development
3. LG	No	Balanced combination	a)Yes b) No	More of the same, current situation is acceptable
4. LG	Yes	An equal balance	a)No b) Yes	R60 Development
5. LG	Not necessarily	Sprawl	a)Yes b) No	Higher quality more expensive development
6. LG	Yes	Balance is needed	a)Yes b) No	More variety, less of the same
7. LG	Yes	Infill	a)Yes b) No	Higher density lots and streetscapes
8. LG	Yes	60/40 as per Livable Neighbourhoods	a)Yes b) No	Well managed High Density development
9. LG	Yes	A nice combination	a)No b)Yes	A good variety in housing types
10. LG	Yes	A Balance	a)Yes b) No	More aesthetically pleasing housing developments
11. LG	Yes	N/A No opinion	a)Yes b) No	N/A
12. Private	Not Yet – It will	A combination	PLN 3.1 is a difficult policy to implement	Higher density development
13. Private	Yes – development potential is maximised	Infill/Urban Consolidation	PLN 3.1 requires changing – too rigid	Battleaxe development, unit development
14. Private	In general terms, increasing density is a positive thing	Urban Infill	R D Codes fulfill their purpose – although not perfect	In Perth metro area – higher coded areas

15. State	Unsure – unfamiliar with TPS No. 4.	Outward development – properly managed.	Unsure, however R D Codes work well in urban (not necessarily rural) areas.	As per rest of Perth, properly managed growth.
16. State	Don't know.	Infill.	R D Codes require revision.	Preservation of bushland
17. State	Yes- there is no other option.	High Density is inevitable, only way to go.	N/A.	Infill, high density, there is no choice, public transport should be free in outer areas
18. State	Land values increase, possibly, in effect you increase population without any corresponding improvement to infrastructure.	Must be a balance, sprawl is not necessarily desirable, expense of infrastructure. High density model Europe/Poland works extremely well.	Councils should be strict in some areas. R D Codes enough in general.	A second CBD is something which should be considered.
19. State	Yes.	Balance is necessary.	R D codes are currently being revised – they may be sufficient if proper changes are made.	Affordable housing – first homebuyer prices for houses.
20. State	Yes- but infrastructure increases must accompany increases in population.	Infill if it is done well, although not suitable in every time and in every instance. We need to go this way.	Not at all – The R D Codes are not place specific, each locality has its own character.	Victorian Townhouses.

4.4 In-depth interview with Strategic Planning Manager

A full-length interview was undertaken with the City of Armadale Manager of Strategic Planning who oversaw creation of and worked on the new scheme for almost a decade. Key findings of the interview are summarized as follows, and a full transcript of this interview is included at Appendix 4. The results of this interview are consistent with the findings of the above survey in a number of ways: the respondent tends to agree that greater density is beneficial as it leads to positive community outcomes. The new scheme has had a positive effect on the City by facilitating an increase in infrastructure and services. The interview took approximately one hour and

was conducted in a private office within the City of Armadale Council building in Orchard Street, Armadale.

The respondent expressed the opinion that split coding allows an individual landowner to control their land. This idea is at odds with neighbouring areas, Gosnells for example, requiring precinct plans covering a far wider area than one lot. A combination of outward development and infill is optimal. The market is the key driver of outward development and is difficult to contain.

Other ideas expressed by the respondent include the view that apartments and other high density housing will not suit everyone's lifestyle – some will want a suburban block and want space. Some want a garden family lifestyle. Increasing density is also a way to address the shrinkage in household size, which has occurred in recent years. This social phenomenon – smaller households are occurring without any intervention represents a digression between policy and outcome. Multiple nodal centres with transport corridors such as rail are the optimal development type for the region (social, economic and environmental benefits).

The view expressed by the respondent was that Armadale was 'dead' prior to last 10 years. 'Before this it was very much a vicious circle – nobody wanted to come to Armadale, there was nothing new, so nobody wanted to come to Armadale. Now Armadale enjoys the opposite situation, a virtuous circle' (City of Armadale 2007).

'Without people you don't have jobs, services and investment, extra people can be a good thing. Armadale is quite unique, not many places have a rail corridor and this needs support. Infill provides a way to increase density. More density means more services, more paths and cycleways, people are walking, there is also a health aspect to this policy' (City of Armadale 2007). Traditionally Armadale has been first homebuyer territory only, bottom of the market investment, for example. However the emergence of North Forrestdale, as perhaps an extension of Canning Vale, taps into a different market. People will aspire to higher levels of housing quality and lifestyle as well as the amenity which goes with it.

4.5 Objective 3 – Changes observed to landscaping over time

From analysing the high resolution aerial photography in the five year period between 2003 and 2007, it is apparent that vegetation has not decreased and has in fact increased in the majority of study areas. In 13 of the 14 precincts studied, vegetation either did not decrease or remained identical to previous years' vegetation cover. Trees and vegetation grow over time and clearing for grouped dwellings has not outstripped the natural pace of growth.

Exceptions to this rule have been localised examples included in the aerial photography provided, however at a wider scale, this removal has had a negligible impact on the overall vegetation density of the City. An explanation for the lack of overall clearing may be that although a high number of approvals are granted by the City, a lower proportion are actually constructed on the ground. As previously stated, approvals can be sought for a lot for marketing and profitability purposes.

In order to compensate for the anticipated loss of vegetation caused by the clearing of lots for green or brownfield development, a standard planning condition on the approval of development applications now requires the provision of a landscaping plan detailing the types of plants (must be WA natives) with additional planting required. The wording for this standard condition under Town Planning Scheme No. 4 is as follows: *Submission of a comprehensive landscape plan (including the verge) to the satisfaction of the Executive Director Technical Services. Such plan is to include plant species (predominantly West Australian natives), numbers, location, container size and method of irrigation of the landscaped areas. The landscape plan is to be approved to the satisfaction of the Executive Director Development Services (City of Armadale 2007).*

Initiatives taken by landowners including the implementation of landscaping plans as well as landowners desire for screening on increasingly smaller lots for example, will also increase the vegetation in selected sites over time, despite some localised clearing for building being inevitable.

The selected sites represent the entire study area and have been the result of a close study analysing the density of vegetation over each precinct. The middle column measures an overall increase or decrease in vegetation density and the far right column summarises the primary data in a quantitative manner. Each precinct was identified starting at the north eastern corner of the aerial scheme map then moving slowly west. The impact of vegetation gain or loss is summarised as follows:

Suburb/Street/Locality	Overall increase or decrease in vegetation growth as a result of new TPS - 2003 – 2007	Overall reduction?
North Westfield – Inverness Circle/ Excalibur Circle Precinct	Very little change – non-detectable change to the amount of vegetation, large houses on smaller lots, newer development.	Neutral, remained the same
South Westfield (older area) Cobham Way to Grovelands Drive Precinct	Slight increase in large tree canopies, general growth, particularly near street frontages.	No
East Westfield – Grasmere Pl to John Dunn Memorial Park Precinct	Increase in growth, some minor clearing, vegetation appears overgrown in parts.	No
North East Westfield – Banyard, Merrifield Ave Precinct	Increase in mid-sized trees, some vacant land parcels due to higher zonings and Structure Plans which show little change.	No
West Westfield Precinct – Ypres Road, Delamere Way precinct	Observable increase in plant and tree growth, very little clearing.	No
North Kelmscott Precinct – Kelmscott Senior High School, Slee Av, Wakehurst Place	No major observable change. Very slight increase.	Neutral, remained the same
Kelmscott Industrial Area – Gillam Drive, Owen Road, Brant Road	No change (very little vegetation in comparison with residential areas).	Neutral, remained the same
South Kelmscott Precinct – Creyk Park, Apex Park, Ottaway Street	Significant growth of many landscaped trees and plants.	No
North Armadale Precinct – Stott Close, Lowanna Way	Some observable growth in vegetation.	No
Seville Grove – Seville Drive Precinct	Some clearing, most established houses contain very little vegetation. Situated in new development areas	Yes
Central Armadale Precinct – Sixth Road, Seventh Road, Townley Street	Significant growth of many landscaped trees and plants.	No

South Armadale Precinct – Farmer Ave, Harbor Drive	Very little change to vegetation, some growth of major trees.	No
South West Armadale Precinct – Chadwick Parade, Tjuna Road	Some observable growth of vegetation.	No
North East Armadale Precinct – Between Wungong and SW Hwy	Significant growth in what is a highly landscaped area.	No

The above findings are supported by the following samples of aerial photography (source for all images: City of Armadale 2007).



a) 2003

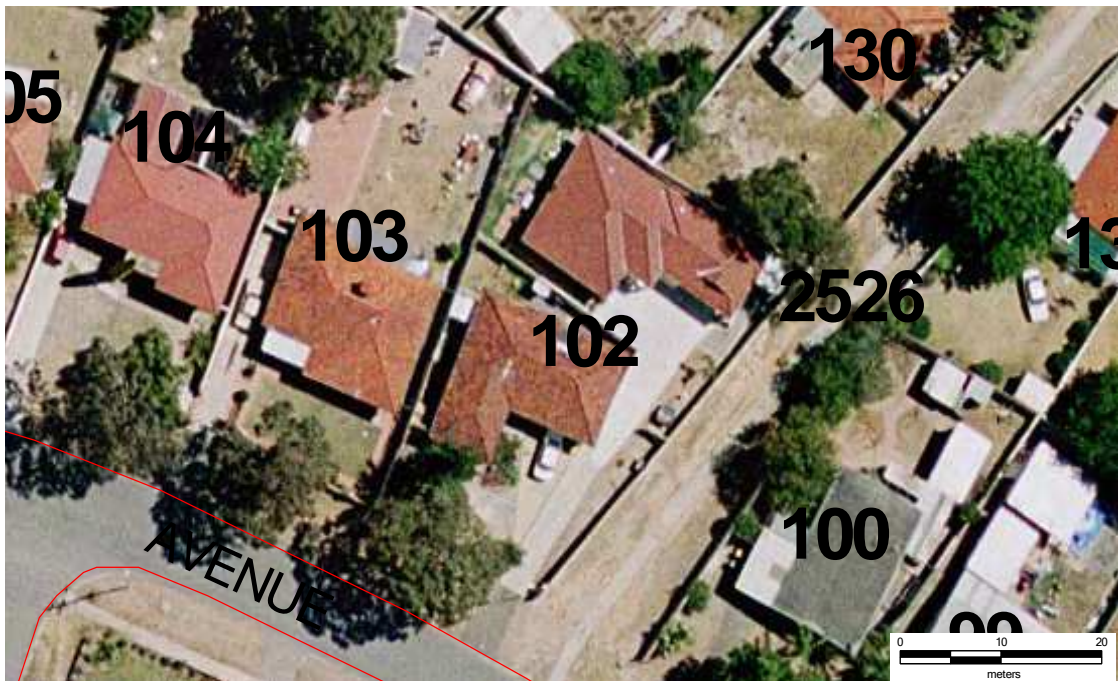


b) 2007

Figure 22a and b North Westfield: Demonstrates that at a precinct level, very little change to vegetation over time has occurred despite increase in development potential



a) 2003 Kelmscott



b) 2007 Kelmscott

Figure 23a and b: Reduction in vegetation Due to second house being added. Localised vegetation removal, however not characteristic of entire study area.



a) 2003



b) 2005



c) 2007

Figure 24a, b and c: Site cleared to facilitate development at an R40 density, localised impact only.



a) 2003



b) 2005



c) 2007

Figure 25a, b and c: No discernable reduction in vegetation throughout wider precinct areas.



a) 2003

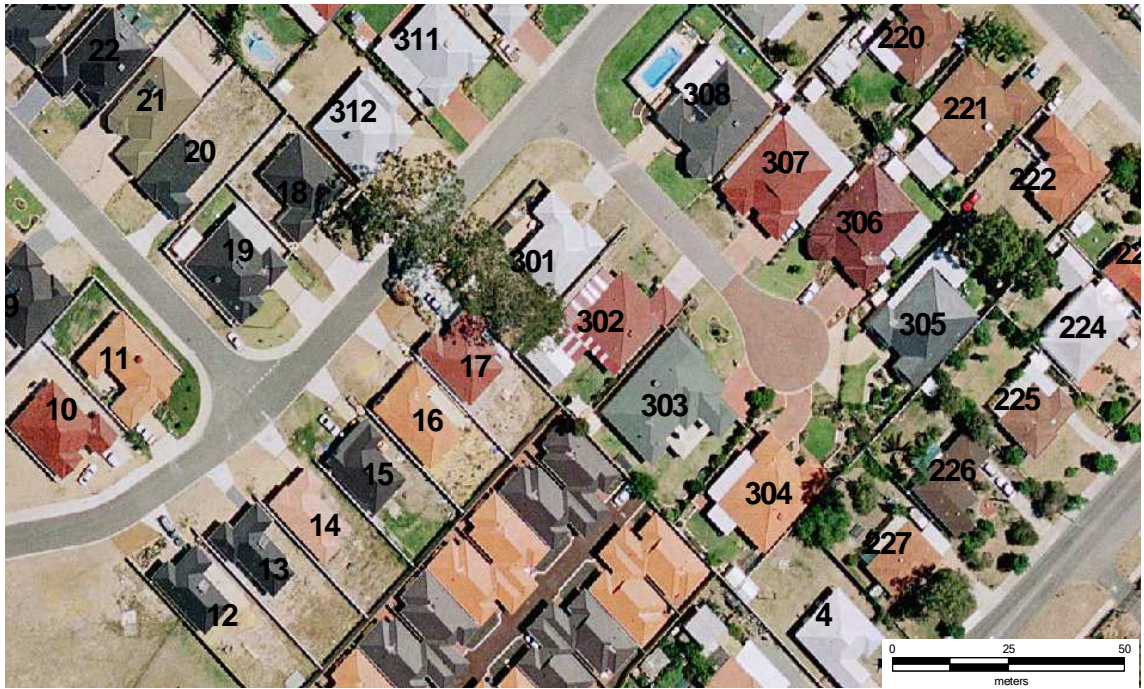


b) 2007

Figure 26a and b: Lot 66 Streich Avenue Kelmscott – vegetation Removed to enable construction of dwelling, however not characteristic of entire study area. (Railway on right was upgraded with white concrete sleepers in 2006).



a) 2003

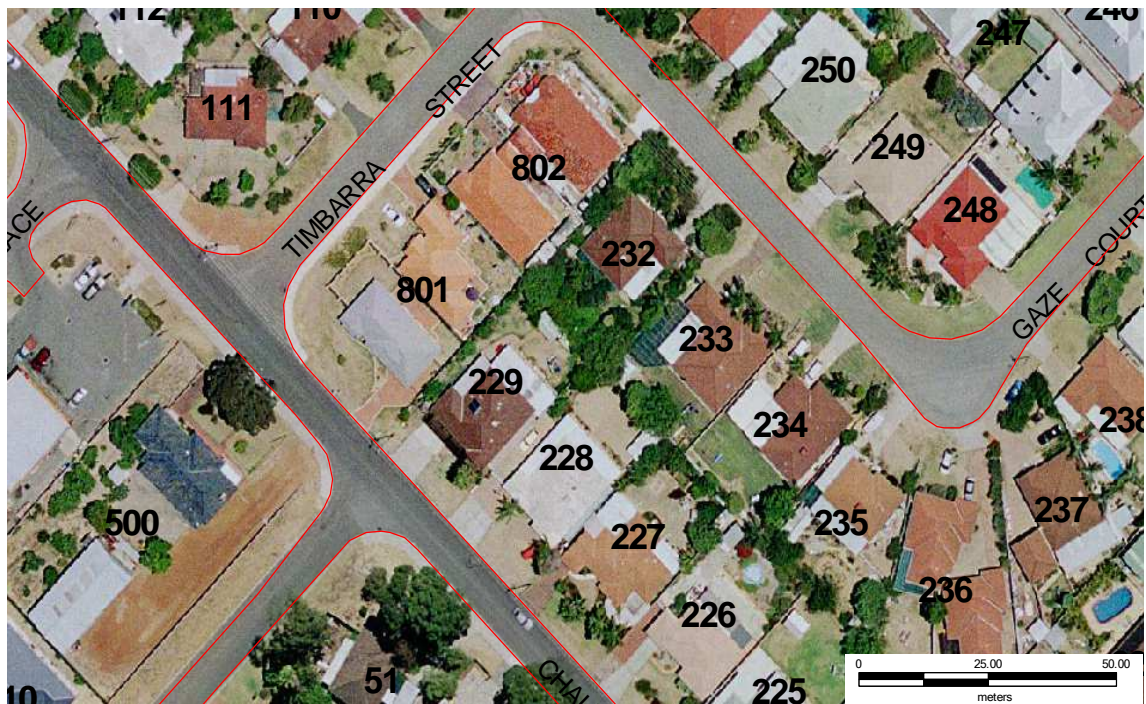


b) 2007

Figure 27a and b: Impact of housing development – smaller lots, some re-vegetation as a result of higher codings.

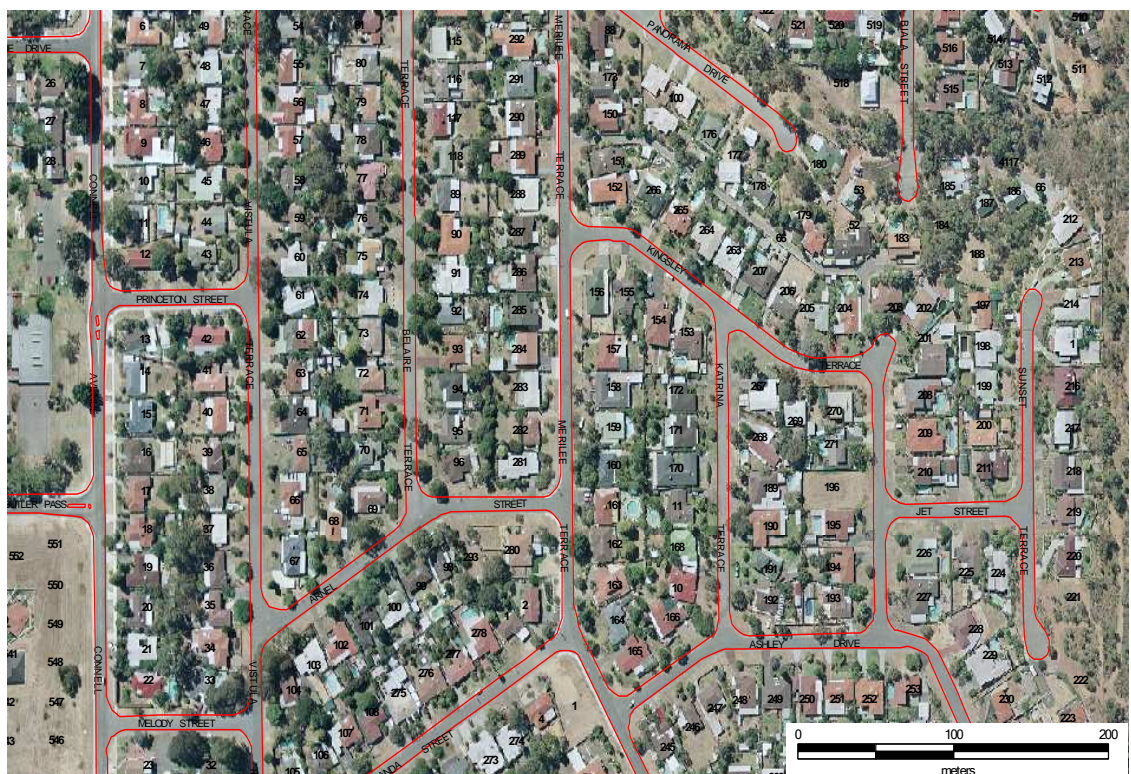


a) 2003

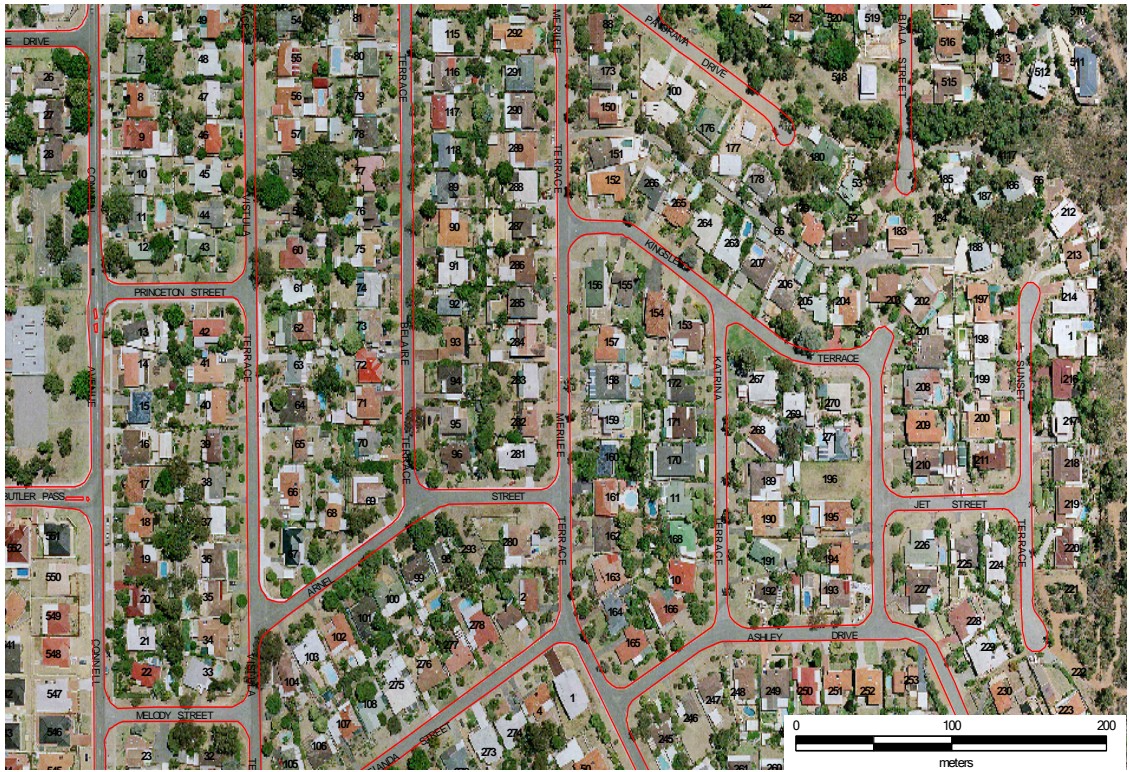


b) 2007

Figure 28a and b: Growth of vegetation characteristic of study area over time, particularly to centre of photograph near lots 232 and 233.



a) 2003

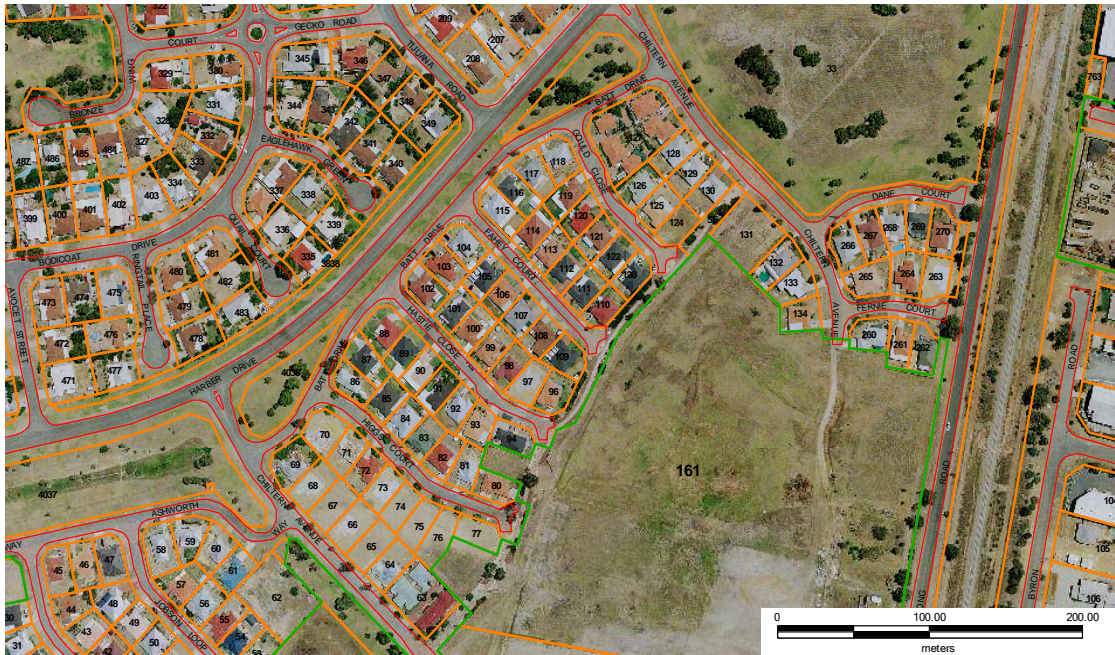


b) 2007

Figure 29a and b: Very little change to vegetation density in overall area.



a) 2003



b) 2007

Figure 30a and b: Housing, increase in hard surface area.

From an analysis of aerial photography over a five year period it can be seen that although some clearing is inevitable and evident where a battleaxe lot is created and a new dwelling constructed, Armadale remains a highly vegetated area with a high proportion of established trees and bushland. Two years after implementation of the new scheme, at a macro level, there has been no significant overall decrease in vegetation within the study area.

4.6 Environmental Initiatives incorporated within the new Town Planning Scheme.

The following section will identify all clauses within the new scheme which were absent from previous schemes. These clauses offer additional protection lacking in the previous town planning scheme. Within the new scheme, a number of measures have been introduced to recognise the significance of the environment. Specific controls relating to development in flood prone areas, public drinking water resource areas, wetland catchments, landscape and bushland areas, prime agricultural land areas, bushfire prone areas, and the Peel-Harvey catchment have been incorporated. The new special control provisions provide additional guidance to enable the City to assess

and determine applications which affect or which may be affected by particular environmental factors.

New controls over land clearing and removal of significant remnant vegetation have been introduced in line with a more sensitive approach towards the protection of natural environmental resources (clauses 5.7, 5B7 and 11.8). Other clauses related to environmental protection include encouraging more sensitive management of storm water and the recharge of underground aquifers where practicable (clause 5.10). Greater protection to waterways and wetlands through the setting back of on-site effluent disposal systems and the specification of systems to aim reduce the level of nutrient enrichment of water bodies (clause 5.11), (City of Armadale 2007).

Within a Rural Living zone or where a development envelope is defined in any zone, clearing of natural vegetation outside the building area or envelope is prohibited without Council approval except for fire protection or vehicular access purposes. In Rural Living and General Rural zones, if land is being grazed in such a way as to degrade the margins of watercourses, the City can issue written directions to stop such grazing and require restoration of the land (City of Armadale, Provision 11.4).

The removal of vegetation is specifically identified as requiring Council approval in landscape and bushland protection special control areas. Structure plans and detailed area plans are required to identify the location and significance of the conservation, and heritage values of the site. Development applications in such areas require non-statutory maps of remnant vegetation to determine if conservation values need to be addressed in a structure plan or detailed area plan (City of Armadale 2007). Thus it is evident that a major intent of the new scheme has been to improve and protect environmental attributes of the City, in a far greater measure than was the case under previous town planning schemes.

In respect to the question posed by this objective it is evident that the City has attempted to incorporate aspects relating to environmental controls with the recognition that protection of the environment is centrally important. This value,

absent from the previous scheme, represents a turning point in Armadale's desire to incorporate sustainability objectives more formally.

4.7 Objective 4 - Economic Factors, impact of the new scheme on land values

Data on asking prices was obtained according to the median house price in selected Perth suburbs. The housing types are not differentiated by REIWA and could represent houses, villas and units, although the most common form of housing in the case study area is an original house on a full sized lot. According to REIWA figures (2007), approximately 70% of all dwellings in the study area were single houses and 30% were grouped dwellings of some description.

The main question posed in this section of the report is: to what extent does increasing the density of residential lots influence sales price? An analysis of the land value of selected suburbs prior to and during the existence of Town Planning Scheme No. 4 is examined in the following section.

From the graphs provided in the following section, it can be seen that the Perth median house price rose most dramatically between 2005 and 2006. This coincided with the gazettal and implementation of the planning scheme in November 2005, however the dual coded suburbs of Westfield, Kelmscott and Armadale (despite having significantly increased development potential), did not keep pace with Perth's median house price trend. This means that other suburbs in Perth rose in a more dramatic fashion without necessary increases in development potential.

The increased rate of growth in Perth's median prices occurred between 2004 and 2007. This could be attributed to other factors besides zoning increases. Proximity to the CBD, the WA housing/ mining boom, increased demand due to migration, the introduction of the first homeowners grant (from July 2000), ignorance as to potential of land, condition of existing housing stock, as well as increased demand from investors may have been factors of greater importance (Gruen 2008).

The key finding revealed in this section is that dual coding does not necessarily guarantee higher land values. This is evident by the Byford and Roleystone graphs. Despite an absence of upcoding (Roleystone has remained at a coding of Residential R5 equating to a 2000m² minimum lot size for the last few years), the suburb rose at a higher rate than the Perth average median sale price, indicating that factors other than density codings influence sale price. This trend was also true of Byford, also subject to a single coding which did not change during the period 2004 – 2007 (WAPC 2008).

In general the majority of the suburbs surrounding the study area performed at roughly the same rate, most failing to keep pace with Perth's median housing price. This is true of Kelmscott and Armadale, but also echoed by Maddington, Kenwick, Huntingdale, Gosnells and Cannington, areas not subject to dual codings. Westfield recorded the lowest growth of any of the 11 suburbs surveyed, rising just over \$10,000 in the period from 2006 – 2007, whereas the Perth Median price rose by over \$50,000.

This demonstrates the absence of a correlation between dual coding and increased property values and also demonstrates that other factors are more important in determining housing growth. An additional factor why the study area failed to perform in relation to similar areas in Perth may have been the low quality of replacement housing stock on increasingly smaller lots, now possible under the new scheme.

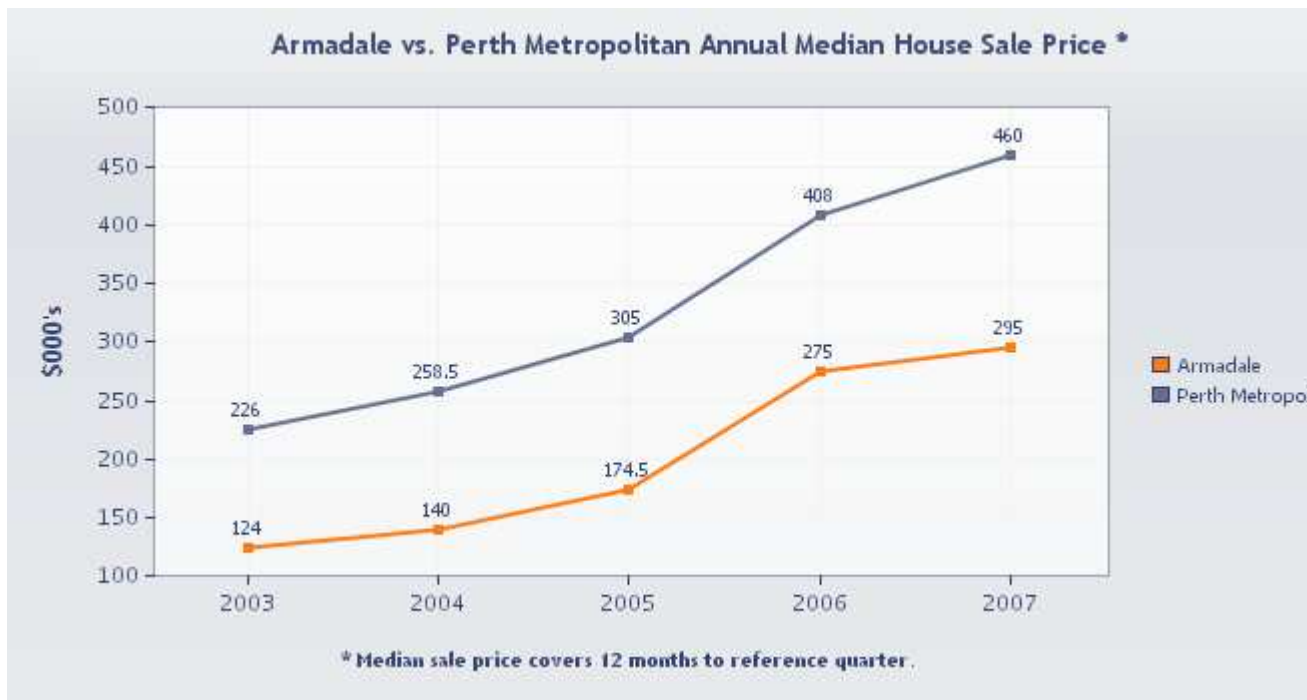


Figure 31 (source for all graphs, REIWA 2007).



Figure 32



Figure 33



Figure 34



Figure 35

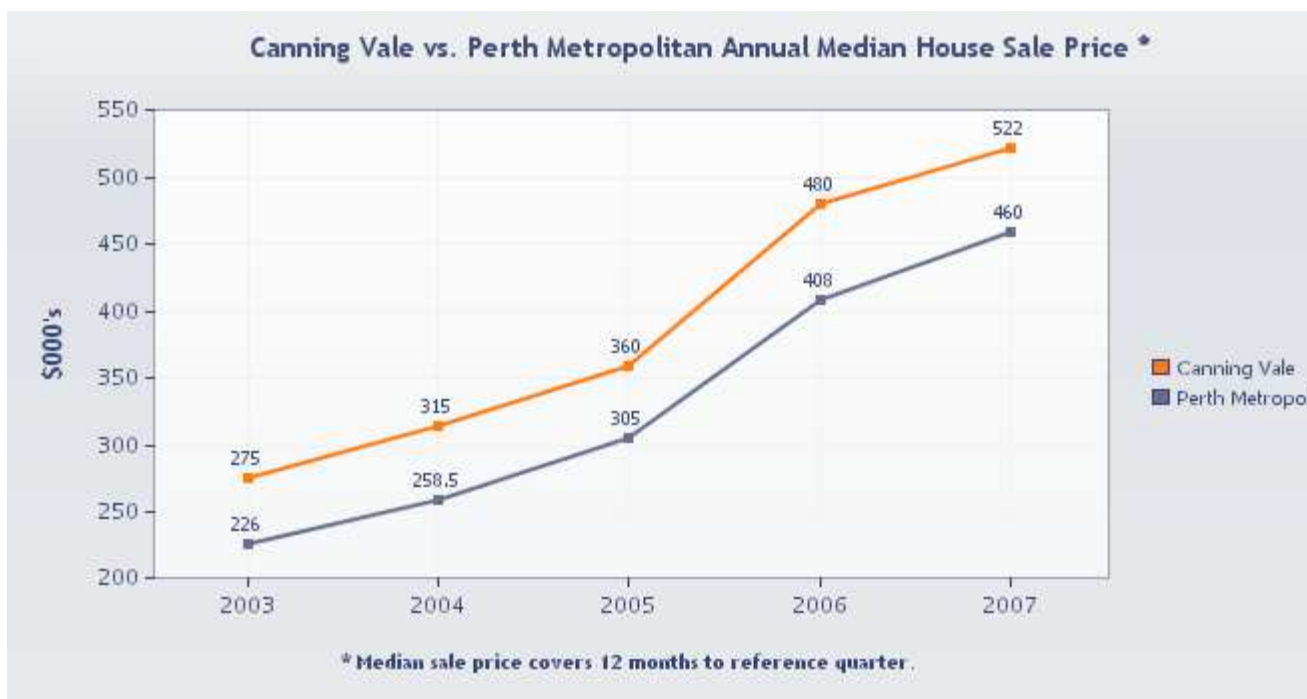


Figure 36



Figure 37



Figure 38

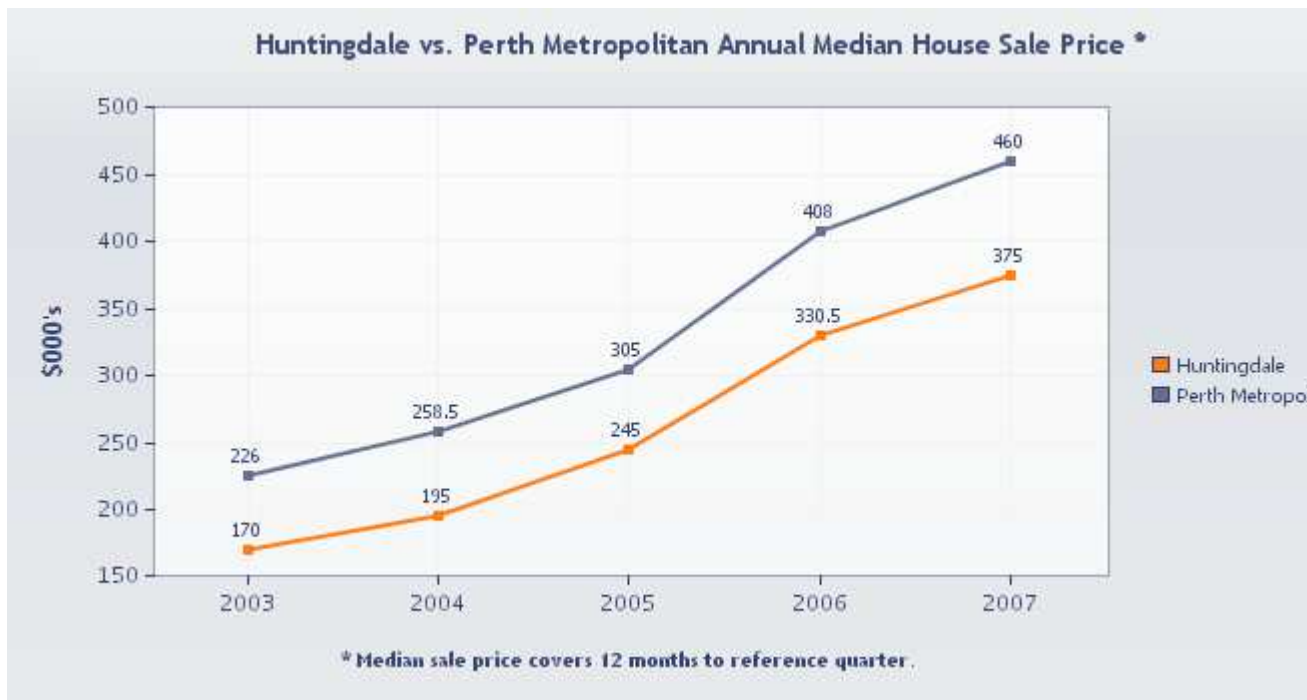


Figure 39



Figure 40



Figure 41

4.8 Objective 5 – Social aspects incorporated within the new scheme

Council's revision to policy PLN 3.1 incorporates a number of social, security and community elements including the provision for surveillance: 'In the case of rear battleaxe proposals, at least one major opening of the rear dwelling should have a clear view to the public street'. Surveillance contributes to a feeling of safety (Network City 2005), particularly for older residents and is incorporated in clause 3.2.4 P4 of the Residential Design Codes (2002).

One initiative introduced within policy PLN 3.1 includes creating useable community spaces for recreation on the development site. 'In the case of proposals including 12 or more grouped or multiple dwellings, the applicant shall demonstrate the way in which the design will make provision for a community focus or community meeting place, possibly with casual seating, or a landscaped feature which may include barbeques and shade structures' (City of Armadale 2007). The intent of this clause is for grouped dwellings not to be 'crammed in' at a density of the maximum allowable, rather the developer is encouraged to incorporate a social/lifestyle benefit within a grouped

housing development in accordance with the social element of the triple bottom line. The minimum area for the community focus is not stated in the scheme, however under the previous Town Planning Scheme No. 2, the area required was 12.5m² per unit (City of Armadale 2004).

Within Town Planning Scheme No. 4, a new provision has been included to recognise the importance of bicycle facilities as a mode of travel and ensure that end-of-trip facilities are provided where it is practical to do so (clause 5.12). A new schedule has been included to address end-of-trip facilities, using the guidelines published as part of the Austroads Standard Guide to traffic engineering practice Part 14 (Schedule 11B) for the parking of bicycles. Many land uses are now required to install the requisite number of 'bike racks' (City of Armadale 2007). A new clause has also been included within the new scheme to address storage of goods associated with building, home occupations and domestic activities in residential areas, providing a basis for locational control and protection of residential amenity (clause 5A.3).

Clause 4.1.3 of PLN 3.1 states:

'The City must be satisfied, and the applicant is to demonstrate, that a Grouped Dwelling proposal is located in close proximity to:

- Public transport
- Recreational open space
- A footpath/cycle way system
- Shopping
- Community facilities'.

Safety and access is incorporated with the aim to 'provide safe, functional and attractive access arrangements in and out of the site, which contribute to the overall aesthetics of a development' (City of Armadale 2007). The new scheme, as well as amendments to local planning policy PLN 3.1 incorporates and emphasises a number of aspects contributing towards achieving the social component of sustainability; bicycle travel, security and surveillance, community focal points, safe access, preservation of amenity, close proximity to services, parks, shopping, public transport and storage.

State Planning documents such as 'Liveable Neighbourhoods' (2000) emphasise the importance of social aspects within planning including the need to design for communities. These include incorporating within development, initiatives such as:

- Movement and network for people with disabilities
- Dual use paths and dedicated bike paths
- Pedestrian interest, safety and efficiency
- Network connectivity and management
- Public transport network
- Walkable neighbourhoods
- Close proximity to school sites and public open space
- Provision of Utilities

The construction of grouped dwellings in residential R25 and residential R40 areas may not seem to have an obvious relationship to social aspects of planning such as benefiting residents and the community in general. However increasing densities inevitably involves a greater number of residents living in smaller and more compact areas, highlighting the need to consider social elements of development. Aspects identified by the City with the potential to influence the wellbeing of residents include standards relating to the way in which a proposed developments will relate to the public street, providing adequate landscaping (for amenity, privacy and screening), providing adequate security/surveillance, as well as providing bicycle facilities, storage facilities, proximity to services, public transport and footpaths.

5.0 Discussion, summary of research and relationship of the findings to the Literature

The substandard planning outcomes experienced by the City of Armadale are supported in the literature explored in Chapter Two of this report. Theorists such as Doppelt (2003) convey the view that market forces do not ensure protection of residential amenity and a high standard of streetscapes, a view echoed many including Ling (2005), Jenkins (1997), Gallagher (2004), Harger (1996), Hardi & Zhan (1997), Pope (2004) and Mendoza (2003) who argue that governments must regulate, as opposed to relying on the market to deliver positive outcomes.

Also conveyed in the literature is the view that Councils should formulate a criteria based approach, a practice occurring within some local government areas, such as the City of Mandurah and the Armadale Redevelopment Authority. The literature review divides the implementation of sustainability into two categories, however the findings of this report demonstrate that a voluntary approach to implementing sustainability is not embraced by the market in every case and is thus less reliable.

Council's agenda item of March 2007 provides evidence that a voluntary, free market system where zoning controls and the Residential Design Codes are the sole means of regulation have not produced desirable planning outcomes, and have not led to principles of sustainability being realised. In this case 'market forces' have enabled a degree of exploitation to occur, resulting in lower than expected development outcomes.

Council's view is that the Residential Design Codes while specific in respect to aspects such as setbacks, height of dwellings, solar orientation and open space requirements, do not always provide the best framework to ensure development is functional, looks attractive, compliments the existing streetscape, is constructed of high quality materials and will last for a comparative length of time to other dwellings in the street. Echoing advocates of the regulatory approach to the implementation of planning, Council's agenda item presents the view that the Residential Design Codes and the local planning scheme in isolation are insufficient to ensure sustainable

planning outcomes: ‘while these documents provide some guidance, experience is demonstrating that greater guidance may be appropriate to ensure that improvements to the City’s stock of housing occurs and opportunistic overdevelopment for speculative purposes is avoided’ (City of Armadale 2007).

Whilst the Marxist view sees planning in terms of power relations, and planning has ‘often allied itself with powerful or economic forces’ (Wheeler 2004 p 45), the development of planning policies act to regulate development, ensuring that powerful developers and real estate interests are now subject to tighter scrutiny. It can no longer be said that planning serves capitalist interests by giving the mere impression of public control, planning in this instance serves community interests first. Although it has been argued that the planning process is nothing more or less than an agent of the State (Wheeler 2004) which generally supports the capital, in this case good design outcomes are a higher priority. Planners are no longer ‘dupes’ to the real functioning of capitalism, but actively involved in promoting higher standards of development for the benefit of the City.



Figure 42: Dwellings as part of a grouped housing development with blank walls, not addressing the street, located in Kelmscott (source, author).

5.1 How planning policies regulate to improve planning outcomes

Council's local planning policy functions as an additional layer of regulation designed to work in conjunction with the Residential Design Codes and Town Planning Scheme No. 4. If a design aspect is lacking or substandard within a planning application, the local planning policy adds greater weight to Council's position to refuse or insist on modification of plans in accordance with good design principles. Policy PLN 3.1 has the benefit of allowing planners to advise developers that aspects of a design are not in accordance both with Council's local planning strategy and the Residential Design Codes, essential leverage in seeking revised designs.

Council's amendment to the Residential Density Development Policy 3.1 provides a greater degree of planning control, given additional statutory weight under the Planning and Development Act (2005). It is evident through amendments to PLN 3.1 that Council increasingly views its position as one of regulator to ensure value is put back into the housing stock with benefits being realised for the wider community in the long term. Council's view is that a free market or voluntary approach to planning has not produced successful results in improving the amenity of the City of Armadale, and developers should no longer assume approval will be granted for substandard, mediocre or non-conforming designs.

5.2 The relationship between policy PLN 3.1 and the Residential Design Codes (2002)

Despite Council's view that further guidance is required in development within the City, many of the concerns presented within the 17 March 2007 agenda item are addressed within the Residential Design Codes. For example clause 3.2.9 A9, when developing a grouped dwelling site involving the retention of a dwelling, requires an existing dwelling 'to be upgraded externally to an equivalent maintenance standard to the rest of the development'. Clause 3.2.4 A4 requires 'at least one habitable room window of the dwelling (having) a clear view of the street and the approach to the dwelling'. Clause 3.2.5 A5 requires 'front walls and fences within the primary street setback area that are visually permeable 1.2m above natural ground level' for security purposes. The logical conclusion is that developers are ignoring provisions within the

Residential Design Codes when submitting plans for development approval.

Clause 2.6.1 of the Residential Design Codes states ‘a Local Planning Policy that affects residential development shall be consistent with the provisions of the Codes and may not provide for greater or lesser requirements than the codes’ (Residential Design 2002). Council’s Policy PLN 3.1 is an attempt to add further regulation to the Residential Design Codes, although they are consistent with the Codes, more specific and localised detail is required.

An example of the consistency between the Codes and Council’s local planning policy is clause 4.3.2.2 of PLN 3.1 which states: ‘garages should not be forward of the front habitable room of the dwelling’. Clause 3.2.3 A3.5 of the R-Codes states: ‘Garages (are to be) set back 4.5 metres from the primary street. Given that the front setback of dwellings zoned R30 and above is four (4) metres, requirements overlap and are consistent, supporting Council’s desire for garages not to dominate streetscapes. Likewise the requirement with fencing above 1.2m to be visually permeable is echoed both in Council’s Policy and Clause 3.2.5 A5 of the Codes. Developers taking advantage of dual codings must familiarise themselves with both documents when submitting planning applications. Not doing so risks delay to the 60-day statutory approval process, one many are understandably keen to avoid.

6.0 Conclusions, recommendations and implications for planning

It can be concluded from the study that infill development made possible through revisions to the local planning scheme has impacted the City of Armadale in a variety of ways. Council documentation as well as surveys and a major interview conducted reveal that after the first few months of the implementation of Town Planning Scheme No. 4, many development applications presented a lower standard of development than required. The introduction and subsequent amendment of policy PLN 3.1 aims to provide greater regulation than that offered by the Residential Design Codes and the newly introduced scheme. The amendment of PLN 3.1 provides an increased level of guidance aiming to provide a higher standard of development than a 'laissez faire' or free market – 'business as usual' approach.

An analysis of the City's aerial photography over a number of years reveals that the type of development occurring within the City has not resulted in a widespread removal of vegetation. In addition, the new scheme has introduced additional environmental controls, absent from previous local planning schemes. A free market approach to sustainability, where developers largely decide on design and use all available space has not resulted in less overall vegetation, although on individual lots, clearing is inevitable where an additional dwelling is constructed.

Council's revision to the local residential density policy, eighteen months after the gazettal of the new scheme is admirable and demonstrates a willingness to address Councillor concerns and local resident complaints. Also admirable is the myriad additional environmental controls present under Town Planning Scheme No. 4, which promote a diversity of social and environmental interests within the City. Despite any potential improvements to the City of Armadale under town Planning Scheme No. 4, there are a number of areas which could benefit from revision in the future.

A review of all of the findings from this report has led to the following recommendations:-

- It is recommended that Council continue to monitor, enforce and guide the level of development which occurs in the City. Site visits before development has been carried out for example, and after construction to ensure conditions have been met, (brick paved driveways, landscaping, colour schedule etc) will ensure that development standards are implemented on the ground and can be improved over time;
- It is recommended that Council continue to refuse substandard applications and request revised plans (citing non-compliance with policy PLN 3.1, Residential Design Codes and Town Planning Scheme No. 4), a positive step towards increasing standards. The resistance by applicants to redesign elevations and site plans with the attendant delays is understandable given the cost in time and resources. However the more important priority is providing a higher standard of development in the City;
- It is recommended that Council continue to allow development at a higher coding in dual coded areas subject to strict criteria being met to ‘achieve improvements to local amenity and housing quality by the provision of a high standard of streetscape within the front setback area and any developed area viewed from the public street’ (City of Armadale 2007).
- It is recommended that Council continue to enforce an emphasis on distinctive urban design elements, provision of eaves, surveillance, distinctive design elements, of community shared space and quality landscaping;
- Roofs are not incorporated in PLN 3.1, are a major part of a dwelling and should also conform to elements of sustainability. Many developers use black, concrete, low quality tiles in their dwellings, which is an area for possible future consideration, in the same way that an absence of eaves has been noted

by Council. Incorporation of shade trees to the front of grouped dwelling sites is another initiative which has been noted but could also be added as a condition of development approval;

- In order to further encourage environmental sustainability, standard conditions provided by development applications could encourage environmentally sound initiatives such as solar panels, greywater reuse, rainwater tanks and other water sensitive design aspects (similar to the ARA), with a possible financial benefit, such as a ‘cash back’ system so landowners do not have to bear the full cost of such initiatives;
- It is recommended that Council formulate a Sustainability charter and accompanying Sustainability Audit similar to the Armadale Redevelopment Authority, to aid precision in sustainability measurement. ‘The first of its kind in Western Australia, the Audit is an online assessment tool integrated with the Development Application process, and will form the basis for assessing the sustainability of proposed developments in the ARA redevelopment areas’ (ARA 2008) (see Appendix 6).

These incorporate:

- Renewable energy (residential);
- Recycled content;
- Sustainable Timber;
- Water efficient fixtures / appliances;
- Water recycling;
- Termite Treatment;
- Kitchen Appliances;
- Heating;
- Cooling;
- Landscaping (residential);
- Energy Efficient Design;
- Private vehicle use (residential);
- Building orientation.

Council currently has no strategic planning document for sustainability. The Armadale Redevelopment Authority has formulated ‘Implementation Strategy for Sustainability’ (2003). This 28 page document incorporates the following:

- Strategic directions
- Implementation plan for the sustainable development of Armadale
- Sustainability audits – a scorecard for success
- Local area implementation plans for sustainability
- Better residential estates
- Better ways to do business
- More jobs
- Developing community networks
- An improved city centre
- Keeping Armadale's character
- A new higher education centre
- Better water management
- Looking after natural areas
- Better recycling and waste reduction

Although based on ethical principles, development cannot be approved unless criteria is met, based on a regulated, criteria-based approach, a process not currently required by the City of Armadale. Such a move towards a more regulated criteria-based approach to the implementation of sustainability is an area which should be considered for any future direction for the City of Armadale and other local authorities in Western Australia. Although the literature promotes the free market as a possible solution, the City of Armadale's experience demonstrates a regulated approach is a superior way to guarantee higher standards of development and aim closer towards the goal of sustainability.



Figure 43: Department of Housing dwelling subject to R15/25 coding, Westfield (source, author).

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Appendix 1 - Information sheet for participants

Research Objective: To evaluate the City of Armadale's incentive for higher density development through Town Planning Scheme No. 4 in the context of sustainability.

Aims: The primary objective of this study is to examine whether revisions to town planning schemes can bring about desirable planning outcomes in relation to sustainability.

Role of Participants

Should you agree to be part of this research, you will be: Interviewed and have your responses recorded on a video camera to be later transcribed or: Provided with a self-administered questionnaire of which you record your own responses and I will retrieve this from you.

Confidentiality

The names of participants and people making comments will not be shown in this dissertation. Your confidentiality will be respected.

Participation is voluntary

Participation in this study is completely voluntary. You can withdraw at any time from the study and have any information you have provided returned to you and not be included in the results of this work. Any decision by you to withdraw from this study will be kept confidential and not result in prejudice or negative consequences.

Risks and benefits to Participants

You can withdraw at any time from this study and have any information you have provided returned to you and not be included in the results of this work.

Contact

This study is being conducted as part of a Masters dissertation for Simon Luscombe. He can be contacted by phone 0433 815 995 or email: simon.luscombe@dhw.wa.gov.au. The supervisor for this study is Shahed Khan who can be contacted by phone on 9266 3276 or email S.Khan@curtin.edu.au.

Human Research Ethics Committee

This study has been approved by Curtin University's Human Research Ethics Committee. If you have any concerns regarding the conduct of this study, please contact Dr Shane Grieve on 9266 2718 or email s.grieve@curtin.edu.au

Timeline for research

This research commenced in January 2006 and is due for completion in June 2008.

Appendix 2 – Consent Form for Participants

Research title: An evaluation of the City of Armadale's incentive for higher density development through Town Planning Scheme No. 4 in the context of sustainability.

This study is being conducted as part of a Masters dissertation for Simon Luscombe. He can be contacted by phone 0433 815 995 or email: simon.luscombe@dhw.wa.gov.au

The supervisor for this study is Shahed Khan who can be contacted by phone on 9266 3276 or email S.Khan@curtin.edu.au.

Consent

I _____

Consent to participate in this research

I have been informed of and understand the purposes of this research;

I have read the information sheet and understand the procedures that will be carried out;

I have been advised of the benefits and risks associated with participation;

I have had an opportunity to ask questions;

I understand that as a participant, my privacy will be maintained and that the information obtained in this research will be used in a manner to obtain absolute anonymity, guaranteed confidentiality, respect and personal rights;

I give permission for the results of this interview/questionnaire to be used in this thesis, on the understanding that my anonymity will be preserved; and

I understand that I may withdraw from the study at any time without prejudice or negative consequences.

Signed: _____

Date: _____

Appendix 3 – Amendment to residential density development policy

City of Armadale Council meeting agenda item www.armadale.gov.au 17 March 2007.

BACKGROUND

Since the introduction of residential density changes under TPS No. 4 there have been a number of development proposals considered by the City in accordance with the Scheme provisions and the adopted Residential Density Development Policy. While these documents provide some guidance, experience is demonstrating that greater guidance may be appropriate to ensure that improvements to the City's stock of housing occurs and opportunistic overdevelopment for speculative purposes is avoided.

Council considered a report on 20 November 2006 relating to the need to encourage innovative architectural design in City development in response to earlier concerns regarding the quality of development. The report outlined the strategies already in place to ensure that development meets certain standards and delivers benefits to the City in terms of design, landscaping and infrastructure.

Councillors expressed further concerns during the February 2007 Development Services Committee meeting and requested that consideration be given to the adoption of additional policies to safeguard against inappropriate development.

Surveys of recent development within the City and in adjacent Cities, and research into policies operational elsewhere have been undertaken. In addition proposed policy provisions have been discussed with locally operating designers and planners with a view to presenting policy amendments to Council.

DETAILS OF PROPOSAL

Amendments to Local Planning Policy PLN 3.1 are proposed to address concerns relating to building design in those areas subject to dual coding and introduce efficiencies into processing applications within R17.5 areas where it is accepted that garages be built on the boundary. The proposed policy amendments have been included and highlighted in the Local Planning Policy PLN 3.1.

In addition, there are provisions of the policy that should apply to areas coded R40 where there is no dual code and accordingly some provisions (in particular relating to rubbish collection) have been adjusted.

The Town Planning Scheme makes provision for various dual codes. These Codes facilitate greater development opportunities in certain localities. However, there is no absolute right to develop to the higher code.

Scheme Clause:

- 5.2.4 states that “the City may permit increases in residential density subject to compliance with the City’s Residential Density Design Policy where land is identified on the Scheme map as R10/25, R12.5/25, R15/25 and R17.5/25, development at the higher density is limited to group dwellings up to a density of R25”: and
- 5.2.5 states that “Development is to be limited to the lower code, except the City may permit development up to a density of R40 where certain conditions are met.”

While the current policy provides guidance on these matters, further policy changes are proposed to clarify the conditions that will be required to be met in all dual coded areas.

Council will need to be assured that development at the higher coding will achieve improvements to local amenity and housing quality. In particular, Council will need to be satisfied that developments seeking to take advantage of the higher coding will:

- Provide some benefit to the general locality by the provision of a high standard of streetscape within the front setback area and any developed area viewed from the public street;
- Be well connected to the street and footpath system to enable future residents to connect to facilities; and
- Result in the development itself offering a high standard of amenity to the future occupants through distinctive urban design elements, areas of community shared space, and high quality landscaping.

The following provisions are proposed to be included in the City’s Residential Density Development Policy:

Building Design

The design of grouped and multiple dwelling development should avoid uniformity by providing a degree of variety in the range of house designs, colours and fenestrations (windows and openings). Development including two storey dwellings or dwellings with lofts are encouraged. Development with eaves or awnings is encouraged.

Streetscape

In the case of rear battleaxe proposals, at least one Major Opening of the rear dwelling should have a clear view to the public street.

In the case of grouped and multiple dwellings:

- A clear view of the proposed development from the Primary Street should be provided by staggering some of the dwelling units, breaking up of roof areas and the appropriate use of site landscaping;
- Surveillance from two or more of the individual units to the Primary Street;
- Garages should be setback 0.5m behind the building line;

- Blank walls or solid fences viewed from the Primary Street should be avoided. The end of Communal Streets should not include horizontal windowless areas unless adjacent dwellings are two storey;
- Blank walls and fencing should be provided with an anti-graffiti finish or be similarly treated;
- Dwellings should not be designed to include blank walls facing the Primary or Communal Street;
- Communal Streets should be central within a development;
- Where access is from a Communal Street, entrances to dwellings should be visible from the Communal Street.

In the case of those dwellings within a grouped dwelling complex with frontage to a Primary Street, the entrance and a major opening of the dwelling should be orientated towards the Primary Street.

In the case of corner lots and front units in a grouped dwelling complex, walls and fences abutting a Secondary Street should be visually permeable 1.2m above natural ground level in the area in front of the building setback line to the Primary Street.

Unless otherwise approved, fencing abutting public open space should be visually permeable when higher than 1.2m above natural ground level.

Appearance of Retained Dwelling

Where an existing older dwelling is to be retained in a proposed grouped dwelling development, improvements to the existing building should include at least one of the following:

- Restoration of the existing roof
- Recladding or rendering of walls
- Repainting of the dwelling

Where an existing older dwelling is to be retained in a proposed grouped dwelling development, improvements to the streetscape should include at least one of the following:

- New front open style fencing
- Re-landscaping within the front setback
- New paving and kerbing in the driveway and crossover

The City may apply more than one of the above criteria, where appropriate.

Open Space and Landscaping

In the case of grouped and multiple dwellings, the applicant shall demonstrate the way in which the design will facilitate interaction between future residents. In general it will be a requirement to provide Communal Open Space for developments including 12 or more dwelling units to provide a community focus of sufficient dimensions by the development of a communal meeting place, with casual seating, or a landscaped feature. Existing trees on a site, especially mature trees, should be preserved wherever possible.

In the case of sites including six or more units, planting of, or retention of, individual mature trees at strategic locations should be provided.

Footpaths

To facilitate improvements to the City's footpath network, development taking advantage of the higher code in dual coded areas and in development within areas coded R40 will be required as a condition of development to make a contribution to the City's footpath fund on the basis of the estimated cost of constructing 5m of footpath for every additional unit proposed for the site.

Amendment to Building Design clause 4.3.1.3

It is proposed that clause 4.3.1.3 be amended by the deletion of "with an absorption value of less than 0.6" because it has been found that information regarding absorption values are difficult to procure from the manufacturers.

Boundary Walls

It is proposed that in areas coded R17.5, walls to garages may be built up to one side boundary where not higher than 3.0m with an average height of 2.7m and up to 9m in length. This provision is available to the R20 Code and would permit development of the kind frequently required in the developing suburbs.

Development Conditions

Over the past year the City's officers have been reviewing and continually developing the City's standard condition list to address concerns that have been raised relating to grouped dwelling development. Attachment X includes the new conditions. Many of the requirements of these conditions are now proposed to be included in the changes to the Policy.

COMMENT

It is proposed to provide greater guidance to planners and developers regarding the standards to be achieved in order to qualify for density bonuses within dual coded areas. The additional provisions primarily relate to building design, streetscape and landscaping requirements and include:

- A clearer requirement that buildings be orientated to the main street for surveillance
- Additional controls on the siting of garages and limitation of blank walls
- Encouragement for two storey development
- Additional controls on fencing to improve the interface with public areas
- Clearer guidance on improvements required to any dwellings retained within grouped dwelling developments
- Consideration to be given to the provision of communal open space to provide a sense of community in large developments and improved landscaping in general

- A clearer statement regarding the requirement to contribute to the City's footpath fund.

In addition it is proposed to use this opportunity to introduce discretion to approve garage walls on boundaries in R17.5 areas accepting that such development is generally accepted.

Options

Council could:

- 1) seek public comment on the amendment to the policy;
- 2) request further investigation prior to considering policy amendments.

CONCLUSION

Concern has recently been expressed at the quality of some of the higher density development being approved in the City. In particular there is concern that in dual coded areas developers are expecting to develop to the higher code as a right rather than where benefits will be provided to the future residents and to the community in general.

It is proposed that the Residential Density Design Policy be amended to provide stronger guidance on the standards of development to be achieved to qualify for higher density in dual coded areas. The standards relate to the way in which the proposed development will relate to the public street, the standards relating to open space, landscaping and footpaths and manner in which new development will be integrated with established development.

In view of the large number of development applications seeking to take advantage of dual coding stronger guidance is needed and therefore it would be appropriate to seek public comment on the policy amendments in accordance with Option 1.

RECOMMEND

- 1. That Council resolve to amend Policy PLN 3.1 Residential Density Development by:**

Adding the following to Building design provisions:

- **The design of grouped and multiple dwelling development should avoid uniformity by providing a degree of variety in the range of house designs, colours and fenestrations (windows and openings). Development including two storey dwellings or dwellings with lofts is encouraged.**
- **Designs with eaves of at least 300mm or awnings is encouraged**

Providing additional streetscape provisions:

- **In the case of those dwellings within a grouped dwelling complex with frontage to a Primary Street, the entrance and a major opening of the dwelling should be orientated towards the Primary Street.**

- **In the case of grouped and multiple dwellings:**
 - **A clear view of the proposed development from the Primary Street should be provided by staggering some of the dwelling units, breaking up of roof areas and the appropriate use of site landscaping;**
 - **Surveillance from two or more of the individual units to the Primary Street;**
 - **Garages should be setback 0.5m behind the building line;**
 - **Blank walls or solid fences viewed from the Primary Street should be avoided. The end of Communal Streets should not include horizontal windowless areas unless adjacent dwellings are two storey.**
 - **Blank walls and fencing should be provided with an anti-graffiti finish or be similarly treated.**
 - **Dwellings should not be designed to include blank walls facing the Primary or Communal Street;**
 - **Communal Streets should be central within a development;**
 - **Where access is from a Communal Street, entrances to dwellings should be visible from the Communal Street.**

Adding to the fencing provisions:

- **In the case of corner lots and front units in a grouped dwelling complex, walls and fences abutting a Secondary Street should be visually permeable 1.2m above natural ground level in the area in front of the building setback line to the Primary Street.**
- **Unless otherwise approved, fencing abutting public open space should be visually permeable when higher than 1.2m above natural ground level.**

Adding to the provisions relating to the retention of existing dwellings:

- **Where an existing older dwelling is to be retained in a proposed grouped dwelling development, improvements to the existing building should include at least one of the following:**
 - **Restoration of the existing roof**
 - **Reclading or rendering of walls**
 - **Repainting of the dwelling**

Where an existing older dwelling is to be retained in a proposed grouped dwelling development, improvements to the streetscape should include at least one of the following:

- **New front open style fencing**
- **Re-landscaping within the front setback**
- **New paving and kerbing in the driveway and crossover**

The City may apply more than one of the above criteria, where appropriate.

- **In the case of rear battleaxe proposals, at least one Major Opening of the rear dwelling should have a clear view to the public street.**

Adding to the open space and landscaping provisions:

- **In the case of proposals including 12 or more grouped or multiple dwellings, the applicant shall demonstrate the way in which the design will make provision for a community focus or communal meeting place, possibly with casual seating, or a landscaped feature.**
- **Existing trees on a site, especially mature trees, should be preserved wherever possible.**
- **In the case of sites including six or more units, planting of, or retention of, individual mature trees at strategic locations should be provided.**

Appendix 4 - Interview with Strategic Planning Manager of City of Armadale

The following interview was conducted with the City of Armadale Manager of Strategic Planning who oversaw creation of the new scheme. Results of this interview support the findings of the above survey in a number of ways; that greater density is good as it leads to positive community outcomes and the new scheme has had a beneficial effect on the City by facilitating an increase in infrastructure and services.

The interview is transcribed as it occurred during late 2007. The questions essentially follow those above, but in a more unstructured qualitative manner which allowed a greater depth of ideas to flow. The interview took approximately one hour and was conducted in a private office within the City of Armadale Council building in Orchard Street.

How did work on the new Town Planning Scheme occur?

I oversaw the new Planning Scheme and worked on it for about 9 years. Interestingly it was one of the first reports in which I used a personal computer, commencing work on the scheme in 1996. Preparation for the new scheme involved a great deal of work, many consultants failed to achieve their goals, whilst planning for future industrial and residential areas including Wungong Urban and Brookdale contributed towards a very large, and almost harrowing undertaking. Creating the scheme also involved neighbouring Gosnells Council with a lengthy consultation and dialogue process. In particular the industrial park in Forrestdale took a lot of time and for me, this was the most frustrating aspect.

Has TPS No. 4 been successful?

Dual coding is an incremental way of doing urban consolidation – it puts the individual in control. They have control over their land, whether to subdivide or more commonly survey strata. The alternative is to redesign a street en masse- but that is never going to happen due to the impossibility of co-ordinating multiple landowners.

Do you prefer low-density development or infill?

I suppose being a fence sitter there needs to be a combination – but outward development doesn't need to be promoted – the land development industry will drive that – i.e.: market forces. Things are the way they are due to existing codings – back many years, in the 1920's – they wouldn't have been had a Town Planning Scheme. Then the Residential Design Codes came in to dictate that how planning is done after the fact. Outward expansion will always happen, it is very difficult to stop.

There are various arguments for and against urban consolidation. Apartments and other high density housing will not suit everyone's lifestyle – some will want a suburban block and want space. Some want a garden family lifestyle you have to admit people will want space if they have a choice. The option to double the density on a lot that you own – and there are a lot of large lots in Armadale to accommodate this. Density is also a way to address the shrinkage in household size, which has occurred in recent years. This social phenomena – smaller households are occurring without any intervention, people are wanting more density and getting less, people more spread out. There is a digression between policy and outcome.

What do you believe are the most ideal housing types for Armadale?

I suppose multiple nodal centres where you have transport corridors such as rail. There are a lot of reasons why they are desirable (social, economic and environmental) if people have amenities where they live, they will travel less e.g.: less clogging of traffic highways, fuel savings, less pollution from exhaust fumes. There are many benefits to this model.

What was your intent in increasing densities under the new scheme?

Town Planning Scheme No. 4 was trying or attempting to build up a strategic regional centre, the Armadale Redevelopment Authority was instrumental in this as was the Armadale/Kelmscott Enquiry by Design. I don't think you can separate these things from the scheme itself – they all influenced its formation.

We were originally doing some work with Department for Planning and Infrastructure and some consultants, then the economy in Armadale started to boom, then the new scheme, the City managed to catch a wave which benefited its growth. 10 years ago, Armadale was dead, I mean absolutely dead. No-one would have spent money and invested in Armadale. But to have infrastructure and good services, you need to have the catchment.

Armadale is not very sprawling, everything is either close to Armadale or Kelmscott. There is also a relationship between private investment (Cinemas, IGA, Technical Colleges) and population density ie: split coding the effects of which will not occur overnight but will over time. People have accesses to more diverse businesses and activities. People can now go to the Cinema here (in Armadale), they don't need to go to Carousel. Prior to this it was very much a vicious circle – nobody wanted to come to Armadale, there was nothing new, so nobody wanted to come to Armadale. Now we have the opposite situation, a virtuous circle.

Prior to 2000, no big businesses wanted to develop in Armadale, the population catchment wasn't there. Without people you don't have jobs, services and investment, so extra people can be a good thing. Now local kids can get local jobs. Armadale is quite unique, not many places have a rail corridor and it needs support. Infill provides a way to increase density, it's a case of economic sense – more people on trains is a good thing.

Also if people are densely organized, an upgrading of services will follow. Sprawl works against this. People become to sparsely arranged to socialize, the only way to meet others is by car, they are isolated and not meeting their neighbours etc. More density means more services, more paths and cycleways, people are walking, there is a health aspect to this social policy.

There is very little two-storey development in Armadale, the market cannot support it, or so it seems. Over time I hope the City will lose its stigma, of a 'dive', a poor place, a horrible place. This stigma has always been a major problem. Given the population growth combined with higher land values, this contributes to greater standards of

housing construction. Traditionally it has been first homebuyers territory only, bottom of the market investment, for example. However the emergence of North Forrestdale, as perhaps an extension of Canning Vale and perhaps even better, taps into a different market. People will aspire to higher levels of housing quality and lifestyle as well as the amenity which goes with it.

Appendix 5 - Typical Development Conditions for a 2 – 5 unit site of grouped dwellings

1. A schedule of external colours and materials is to be submitted to and approved by the Executive Director Development Services. Alternative colour tones and materials are to be used for each dwelling to demonstrate a high standard of visual amenity and attractive streetscape. The development is to be completed and maintained in accordance with the approved schedule to the satisfaction of the Executive Director Development Services.
2. Submission of a comprehensive landscape plan (including the verge) to the satisfaction of the Executive Director Technical Services. Such plan is to include plant species (predominantly West Australian natives), numbers, location, container size and method of irrigation of the landscaped areas. The landscape plan is to be approved and all landscaping installed and maintained, to the satisfaction of the Executive Director Development Services.
3. With the exception of fencing within the front setback area, internal fencing and other property boundary fencing is to be 1.8m high measured from the new ground level / top of retaining walls and constructed to a minimum standard of masonry, “Colorbond” or fibro cement painted in a colour to complement the proposed development, to the satisfaction of the Executive Director Development Services.
4. Details of fencing within the front setback area or fronting the public realm (i.e.) demonstrating permeable visibility are to be submitted. The fencing is to be completed and maintained in accordance with the approved plan to the satisfaction of the Executive Director Development Services.
5. Any walls or fencing fronting the public realm (i.e.) are to be treated with an anti-graffiti finish to the satisfaction of the Executive Director Development Services.
6. Submission and implementation of a stormwater management plan in accordance with water sensitive design principles to the satisfaction of the Executive Director Technical Services.
7. Crossovers, driveway, car parking and vehicle manoeuvring spaces shall be constructed, drained, sealed, kerbed, marked and continuously maintained in accordance with the approved site plan to the satisfaction of the Executive Director Technical Services.
8. Driveways to be brick paved to the specifications and satisfaction of the Executive Director Technical Services.
9. A cash-in-lieu payment for footpath construction being paid to the City at the rate of 5 metres of footpath per unit to the satisfaction of the Executive

Director Technical Services.

10. Existing crossovers to be removed and all kerbing / footpaths to be reinstated to the specifications and satisfaction of the Executive Director Technical Services.

Advice Notes

- A With regard to condition No.2, please find enclosed a copy of the City's Landscaping Guidelines –Grouped Dwellings and the Landscaping Guidelines – Plants to Avoid, to assist you to formulate a satisfactory landscaping proposal.
- B With regard to Condition No. 3, fencing within the front setback area is to be visually permeable above 1.2m in accordance with the Residential Design Codes.

Appendix 6 - Armadale Redevelopment Authority Sustainability Audit

Renewable energy (residential)

Aim: To promote buildings that generate part of their energy demand from a renewable energy source.

**Submission
Requirements:
Criteria:**

- ☐ Level 1: Installation of an electric hot water system with a minimum 4 star energy rating OR installation of a solar hot water system with electric booster.
- ☐ Level 2: Proposal provides for a gas instant hot water system (minimum 4 stars)
OR proposal provides for a solar hot water system with gas booster (minimum of 4 stars)
- ☐ Level 3: Proposal provides for solar hot water system with a gas booster (minimum of 5 stars)

Kitchen Appliances

Aim: To minimise the energy use in the kitchen

**Submission
Requirements:
Criteria:**

- ☐ Level 1: No minimum requirement however installation of a dishwasher must comply with a minimum 3 star energy rating
- ☐ Level 2: Installation of gas hotplate OR fan forced gas or electric oven. Where applicable - dishwasher with a minimum 3.5 - 4 star energy rating.
- ☐ Level 3: Installation of gas hotplate AND fan forced gas or electric oven. Where applicable - dishwasher with a 4.5 - 5 star energy rating

Heating

Aim: To minimise the green house emissions associated with heating the building

**Submission
Requirements:
Criteria:**

- ☐ Level 1: Installation of gas bayonet in a living area
OR
If ducted heating is installed it must comprise the following:
 1. comprise a zoned system
 2. have a minimum EER of 3

Heating

Installation of ducted heating which complies with the following:

- ☐ Level 2:
 - 1. comprise a zoned system
 - 2. have an EER greater than 3
- ☐ Level 3: Artificial heating not required

Cooling

To minimise the energy required to cool the building

Aim:
Submission Requirements:
Criteria:

- ☐ Level 1:

If installation of artificial cooling is proposed, it must comply with the following:

 - 1. comprise a zoned system
 - 2. have a minimum EER of 2.6 OR 3 star energy rating

If installation of artificial cooling is proposed, it complies with one of the following

 - 1. Installation of an evaporative air conditioner with a zoned system
- ☐ Level 2:

OR

 - 2. Installation of refrigerative air-conditioning:
 - i) comprise a zoned system
 - ii) have a minimum EER of 2.9 OR 4 star energy rating

OR

 - 3. Installation of a ceiling fan/s
- ☐ Level 3: Artificial cooling not required

Energy Efficient Design

To minimise the energy required to achieve adequate levels of thermal comfort, ventilation and lighting in occupied spaces

Aim:
Submission Requirements:
Criteria:

- ☐ Level 1:

FirstRate assessment of 5 stars

Note: A certificate of compliance must accompany the application. Plans will not be processed by the ARA unless the certificate is submitted.
- ☐ Level 2: FirstRate assessment of 5.5 stars
- ☐ Level 3: FirstRate assessment of 6 or more stars

Building orientation

To encourage solar access for occupied buildings to reduce heating, cooling and lighting energy

Aim:

Building orientation

Submission Requirements: Criteria:

- ☐ Level 1: No minimum requirement
- ☐ Level 2: External walls aligned with Nth-Sth and E-W axes (within arc of 20deg E - 10degW of true north) with the balance of the living areas sited to the North of the building
- ☐ Level 3: External walls aligned with Nth-Sth and E-W axes (within arc of 0-10deg E of true north), with the balance of the living areas sited to the North of the building

Appendix 7 – Excerpt from City of Armadale Town Planning Scheme No.4

5.2.4 The City may permit the following increases in residential density subject to compliance with the City's Residential Density Development Policy:

- a) Where land is identified on the Scheme Map as R10/25, R12.5/25, R15/25 or R17.5/25, development at the higher density is limited to grouped dwellings up to a density of R25;
- b) Where land is identified on the Scheme Map as R25/40 grouped dwellings at the higher density is limited to grouped dwellings up to a density of R40;
- c) In the case of properties fronting more than one street or an open space reserve, and where land is identified on the Scheme Map as R10/25, R12.5/25, R15/25 or R17.5/25, grouped dwellings up to a density of R30;
- d) In the case of properties abutting public access ways (PAWs) and where land is identified on the Scheme Map as R10/25, R12.5/25, R15/25 or R17.5/25, grouped dwellings up to R40;
- e) If a provision of a Structure Plan imposes a classification on the land included in it by reference to the Residential Design Codes, which is inconsistent with the Scheme Map, then the provision of the Structure Plan prevails to the extent of any inconsistency.

5.2.5 Where land is identified on the Scheme Map as R15/R40, grouped dwellings or support subdivision is to be limited to the lower code, except the City may permit grouped dwellings or support subdivision up to a density of R40:

- a) where the property is provided with reticulated sewerage, adequate drainage and a footpath/cycleway system; and
- b) where the City has given consideration to the application in the context of compliance with the City's Residential Density Development Policy and the extent to which the proposal is located in close proximity to the following facilities:
 - (i) A public transport stop or station;
 - (ii) A convenience shopping site;
 - (iii) A recreational open space or other recreational facility; and
 - (iv) A community facility.

5.2.6 In those non-residential zones in which grouped or multiple dwellings are permitted at the discretion of the City (Local Centre, District Centre and Mixed Business / Residential), the maximum density of development shall be determined by the City, taking into consideration the suitability of the area for the proposed development and the likely impact of the development on the amenity of the locality.

5.3 Special application of Residential Design Codes (variations and additions)

5.3.1 Special Residential Zones:

- (a) Where a development envelope has been identified on an approved development plan, no building (including an outbuilding) may be erected outside the envelope, unless otherwise approved by the City.
- (b) Buildings in the Special Residential zone are to accord with the requirements of R5 under the Residential Design Codes unless otherwise required by the Scheme in accordance with part (c) below or provided for under an adopted Structure Plan.
- (c) Except where an approved development envelope is located closer to the boundary, the following setbacks are to apply by way of variation to the Residential Design Codes, unless otherwise approved by the City –
 - (i) Where lots have an effective width of between 25 and 40 metres, side setbacks are to be a minimum of 3 metres.
 - (ii) Where lots have an effective width of more than 40 metres, side setbacks are to be a minimum of 6m.
 - (iii) Where lots have an effective depth of more than 50m, rear setbacks are to be a minimum of 15m.

5.4 Restrictive covenants

5.4.1 Subject to clause 5.4.2, in the case of a restrictive covenant affecting any land in the Scheme area by which, or the effect of which is that, the number of residential dwellings which may be constructed on the land is limited or restricted to less than that permitted by (a) the Scheme; or (b) the provisions of the Residential Design Codes which apply under the Scheme, then that restrictive covenant is hereby extinguished.

5.4.2 Where clause 5.4.1 operates to extinguish or vary a restrictive covenant the City is not to grant planning approval to the development of the land which would, but for the operation of clause 5.4.1, have been prohibited unless the application has been dealt with as an 'A' use and has complied with all of the advertising requirements of clause 9.4. **Note:** *This will necessitate information on restrictive covenants affecting density. A copy of the title will accordingly be required for grouped or multiple dwellings. [Refer clause 9.1]*

5.5 Variations to site and development standards and requirements

5.5.1 Except for development in respect of which the Residential Design Codes apply, if a development is the subject of an application for planning approval and does not comply with a standard or requirement prescribed under the Scheme, the City may, despite the non-compliance, approve the application unconditionally or subject to such conditions as the City thinks fit.

5.5.2 In considering an application for planning approval under this clause, where, in the opinion of the City, the variation is likely to affect any owners or occupiers in the general locality or adjoining the site which is the subject of consideration for the variation, the City is to —

(a) consult the affected parties by following one or more of the provisions for advertising uses under clause 9.4; and

(b) have regard to any expressed views prior to making its determination to grant the variation.

5.5.3 The power conferred by this clause may only be exercised if the City is satisfied that —

(a) approval of the proposed development would be appropriate having regard to the criteria set out in clause 10.2; and

(b) the non-compliance will not have an adverse effect upon the occupiers or users of the development, the inhabitants of the locality or the likely future development of the locality.

5.6 Environmental conditions

5.6.1 Environmental conditions to which the Scheme is, or amendments to the Scheme are, subject are incorporated into the Scheme by Schedule 10 of the Scheme.

5.6.2 Where appropriate, the environmental conditions are indicated on the maps comprising the Scheme by the symbol EC to indicate that environmental conditions apply to the land.

5.6.3 The City is to —

(a) maintain a register of all relevant statements published under sections 48F and 48G of the *Environmental Protection Act 1986*; and

(b) make the statements available for public inspection at the offices of the City. **Note:** *Environmental conditions are those required to be incorporated into a Scheme or an amendment to a Scheme following assessment under the Environmental Protection Act 1986.*

5.7 Control of land clearing where development envelope defined

5.7.1 Where a development envelope has been identified on an approved development plan, no clearing of natural vegetation or the destruction or damage of trees is to take place on the lot, other than within the designated envelope, except:

(a) as necessary for the establishment of an approved vehicular access from the adjacent street to the designated development envelope;

(b) as required to satisfy necessary bush fire protection measures as determined by the

City or other relevant authority; or

(c) as otherwise approved by the City in accordance with the provisions of clause 5.5.

5.8 Management of construction sites

5.8.1 In addition to any requirements which may be imposed as conditions of development, construction sites are to be managed so as to minimise soil erosion or the degradation of any water resource due to the action of wind or water and protect as far as practicable, the natural resource values of the site and of the adjacent area.

***Note:** Where a construction site is, in the opinion of the City, being managed in such a way as to cause undue erosion of soil or the pollution of any water resource, the City may, in accordance with the provisions of clause 11.4, require the owner to take steps to prevent any further erosion or pollution and remediate the site. Such action may include stabilisation of soil or re-instatement of vegetation cover and repair of any damage to the land or water resources.*

5.9 Use of reflective materials

5.9.1 No building structure, shall be constructed east of the Albany Highway from the City's northern boundary to its junction with the South Western Highway and thereafter east of the South Western Highway, with any external sheeted surface of zinalume, metallic or white coloured finish, without the City's approval.

5.9.2 The City may approve the development of buildings or structures involving a roof or walls with any external sheeted surface of zinalume, metallic or white coloured finish, with or without conditions, or may refuse to approve the application, having due regard to:

- (a) the potential impact on the amenity of the locality; and
- (b) the objectives and relevant performance criteria in the Residential Design Codes.

5.10 Drainage and water sensitive design

5.10.1 Any development which increases the area of impermeable surfaces or which otherwise reduces stormwater recharge of groundwater systems, is to utilise best management practices so as to minimise as far as practicable:

- (a) changes to both the rate and quantity of direct stormwater discharge from the site, and
- (b) the export of water borne pollutants (including nutrients).

5.10.2 Drainage system design and management is to be undertaken in accordance with best management practices and in order to mitigate any degradation of land or water resources, and measures are to be put in place to prevent litter from entering drainage systems.

5.11 Effluent Disposal

5.11.1 Where access to a reticulated sewerage system is not available, on-site effluent disposal facilities are to be provided to treat and dispose of any domestic effluent.

5.11.2 No effluent disposal facility (including any leach drain or soak well) is to be located:

- (a) within 6m of any open drainage channel or subsoil drain; or
 - (b) within 30 metres of the outer edge of an intermittent water course; or
 - (c) within 50 metres of the outer edge of a permanent water course in the case of a nutrient removal system or within 100 metres for a conventional septic system; or
 - (d) within 50 metres of any protected wetland, or within such greater distance as may be required to achieve a minimum one metre vertical separation between the natural ground level at that distance and the natural ground level of the adjacent wetland vegetation; or
 - (e) within 50 metres of a bore or underground water source used for human consumption,
- unless otherwise approved by the City in accordance with the provisions of clause 5.5.

5.11.3 Nothing in this clause is to prevent the City requiring additional setback requirements for effluent disposal facilities and/or requiring the installation of specific types of facilities (including those involving the removal of nutrients) where it considers such requirements appropriate or necessary for the protection of water resources or other environmental values.

5.12 Bicycle facilities

5.12.1 Unless otherwise approved by the City in accordance with the provisions of clause 5.5, end of trip bicycle facilities are to be provided in accordance with the standards for respective uses detailed in Austroads Standard *Guide to Traffic Engineering Practice Part 14 - Bicycles* as set out in Schedule 11B.

5.13 Subdivision

5.13.1 Subdivision within a Development Area is subject to the provisions of clause 6.A, which requires the preparation and approval of a Structure Plan prior to subdivision.

5.13.2 In an area where comprehensive planning is required, a Structure Plan may be required prior to the City's support for subdivision, notwithstanding the area has not specifically been defined as a Development Area.

5.13.3 In approving applications for commencement of development relative to subdivision, the City may recommend that the Commission impose conditions requiring the continuous fencing of lots backing on to or abutting a public reserve.

